

**Department of Computer and Information Sciences
University of Strathclyde, Glasgow**

**An Ethnographic Investigation of Information
Seeking in the Primary Classroom**

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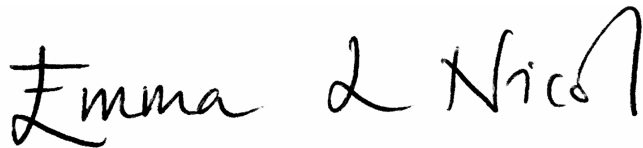
**A thesis presented in fulfilment of the requirements for the degree of
Doctor of Philosophy at the University of Strathclyde**

2019

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Signed:

A handwritten signature in black ink that reads "Emma L Nicol". The signature is written in a cursive style with a large initial 'E' and a distinct 'L'.

Date:

22 July 2019

Previously Published Work

Three publications have so far resulted from research undertaken for this thesis. These are:

“Using artefacts to investigate children's information seeking experiences”.

Nicol, E. (2014). In Proceedings of the 5th Information Interaction in Context Symposium, 291-294. This paper was presented as a poster at Interaction with Information in Context (IliX2014) in Regensburg, Germany 2014.

“How to Study Children Searching For Fun: Some Experiences and Reflections”.

Nicol, E., Landoni, M. (2014). This paper was presented at the Searching for Fun (eds. Church et al) workshop at Interaction with Information in Context (IliX2014) in Regensburg, Germany 2014.

“A comparative study into how pupils can play different roles in co-design activities”. Landoni, M., Rubegni, E., Nicol, E (2018). In Special Issue of the International Journal of Child-Computer Interaction, 720-725, 2018.

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Abstract

This thesis describes a school-based study that was undertaken to investigate the information-seeking behaviour of primary school children. A review of the literature in the area of child information behaviour was undertaken. Five key areas of interest were identified for investigation: how children define success in information seeking and how this contrasts with adult perspectives on the same; the support that children require when seeking information at different ages; the influence of age on children's information channel preferences; the influence that situation or context have on child information-seeking behaviour; the effect of gender on each of these dimensions. Readings in the area revealed few studies where authentic, teacher-imposed information activities had been studied. Rather than relying on the researcher-designed tasks that were the focus of a majority of studies, existing classroom tasks derived from the national curriculum were the basis of the investigation. An ethnographic approach was taken involving data collection via observation, making extensive use of teacher-created data collection tools such as post-task evaluation forms. Information artefacts such as posters and reports created by children during the tasks were analysed then used as a discussion point in focus groups. Teachers' perspectives were gathered by collecting and analysing their assessment feedback and also via interviews. A parallel investigation of children's leisure information seeking behaviour was undertaken using a survey and focus group approach. Two classes at either end (9-10 years and 11-12 years) of the concrete operational stage of development were studied. The findings have implications for support for children's information seeking, information task design, evaluation design and search system development. A further contribution is in the description of a method for evaluating child information-seeking behaviour via the discussion, in focus groups, of the pieces of work or artefacts produced during information tasks.

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Chapter 1 Introduction

Children require information for multiple purposes: for school assignments, for leisure and entertainment, for self-development and wellbeing. The widening availability of Internet access has increased the expectation that children should be able to find and manage multiple resources and this is certainly as much the case in the classroom as it is elsewhere in children's lives. Increasingly, school curricula are based on project or inquiry-based learning, which requires children to perform multi-source searching even in the earliest years of elementary school (Nesset, 2005). Such information skills have come to be regarded as essential and it is generally expected that children will be accomplished in this regard, yet it has long been clear to me, both from my readings of the literature and experiences of working with teachers and schoolchildren on projects such as the Webkit project on tangible access to information for children e.g. (Rode et al., 2003) and on the Strathclyde Laptop project e.g. (Coen et al., 2007) that children often struggle to carry out information tasks in ways that would surprise many adults. Arguably this surprise arises from widespread incorrect assumptions that children will have superior Internet and information technology skills to their parents (Livingstone, 2016). In the Strathclyde Laptop study, in which I conducted many interviews and focus groups with teachers, head teachers and student teachers regarding their experiences of using technology in their teaching, among my other findings, I concluded that many children were struggling with the information tasks they were encountering in the classroom and that their success in these was also greatly influenced by the specific classroom environment both in terms of the resources available and the knowledge and motivation of the teachers. In the computer and information science literature however, I did not encounter many studies that had truly investigated children carrying out information-seeking tasks in a way that I thought reflected the reality of what children were encountering at school, with the majority of

studies wholly reliant on tasks devised or simulated by researchers, and often conducted outside of the normal classroom environment where children carry out the majority of their formal information-seeking, with most studies being set instead in labs or in specially created workshops conducted outwith normal school hours and outwith the normal classroom where children had their usual lessons.

Many models of information seeking behaviour have been developed over the years. In the main they have been developed via observation of adult and or adolescent information seeking behaviour e.g. (Kuhlthau, 1991) and are not directly applicable to younger children i.e. under 12 years of age because of the significant cognitive differences that exist between adults and children. In addition, no model yet fully accounts for those differences that exist at each stage of a child's development that determine their ability to process information. For example, when learning a skill, information is stored in the working memory. Lacking the experience of adults, children require a great deal of working memory capacity to process information. As experience is gained, some of the processes that a child has mastered make the transfer to the long-term memory, which means that space is gained in the working memory allowing new tasks to be learned. As a result, older children have a greater chance of success at complex tasks than younger children do, due to their being able to perform some processes automatically (Hale and Fiorello, 2004). Younger children on the other hand, are thinking about all or at least most of the processes, which puts a great strain on their working memory (Kail, 2004). This means that younger and older children who are able to perform the same tasks will likely experience a big time difference in doing so. Abstract thought is considered necessary by e.g. (Kuhlthau, 1988) to carry out the multi-source searches required by today's curricula, but in general children have not gained this skill until the age of 11, so existing models are not yet able to take account of these developmental differences.

In addition to the weaknesses of current models in describing child information behaviour, the evaluation methods traditionally employed for investigating this behaviour are often inappropriate or ineffective when used with children. Maturity and reading levels mean questionnaires require very careful design or should not be used at all, particularly with younger children. Interviews and think aloud techniques can be compromised because of difficulties that children may have in verbalizing thoughts and experiences (Druin, 1999a). In interview situations children often try to please adults, are easily distracted, and have difficulty expressing their likes and dislikes (Hourcade, 2008) and there are power structures between adults and children that can be difficult to get past (Druin, 1999b). In schools, permission to use logging as used by e.g. (Duarte Torres et al., 2010) can be difficult to obtain and, in any case, when used in isolation, it cannot describe the whole picture of information sources viewed and used and the information decisions made. In addition, the home context and its influence on the information seeking behaviour that takes place elsewhere has not yet been fully considered.

In conducting an investigation of information seeking in the formal educational setting of a Scottish primary school classroom I aimed to understand how children tackle information problems as presented by their teachers, rather than designing my own information tasks. I had to develop a methodology that would work in the school environment that would not interfere with the children's schedule and which was flexible enough to take account of sudden changes or disruptions to the school timetable and resource availability. Rather than relying on having pre-prepared pre and post-task evaluation tools to employ (though gradually some such methods were introduced), which for the scheduling reasons stated was not always possible, I made use of the materials or artefacts produced as a result of information seeking e.g. essays, posters or the text and images that children produced or with which chose to fill gaps in a worksheet, a technique discussed by (Alexandersson and Limberg, 2003) and others. My hypothesis was that analysing the artefacts themselves and, further, by using artefacts as a support to encourage children to talk about the work that

they had produced, would provide more insights than would be possible via observation of the information seeking activities alone. Additionally, communicating with children in this way via their own work would, I hoped, provide a more natural and familiar way for them to talk about their experiences than is often the case in an interview or focus group setting, overcoming some of the difficulties alluded to in (Hourcade, 2008).

Capturing experiences by asking children to produce drawings has been demonstrated to be an effective technique (Sylla et al., 2009) (Xu et al., 2009) and the use of such props in conducting effective interviews with children was further demonstrated in a study that explored children's use and enjoyment of interactive digital museum displays (Nicol and Hornecker, 2012). Part of the success of (Nicol and Hornecker, 2012) came from the children's pride in explaining what they had created and pointing out to the researchers what was being referred to by the different parts of their drawings. Given this, and having physical artefacts available that had been created in response to information-seeking tasks, it seemed practical to use these artefacts to facilitate discussion in post-task focus groups. Another benefit gained by using artefacts in this way was the ability to evaluate the experiences of a whole class. Many information tasks are carried out by a whole class of children at one time, which means that researchers engaged in observational activities are often limited to following one group only. Using artefacts as a support allowed me to take multiple groups back to revisit their information experiences to achieve a richer understanding of children's experiences.

Following a review of the literature in the area of children's information-seeking behaviour and in response to my emerging understanding of the school environment in which the study took place, five research questions were devised. An ethnographic school-based study with teacher-imposed tasks and artefact-reliant methodology was used to investigate these questions. The work undertaken for this thesis attempts to answer these questions.

Research Questions

For real information tasks:

- **RQ1 How do children define success in information seeking and how does this differ from adult perceptions of success?**
- **RQ2 How does a child's age influence the amount of support that is required from others in order to complete a task?**
- **RQ3 How does a child's age influence the information channel chosen to complete information tasks?**
- **RQ4 How does the context or situation influence child information seeking behaviour?**
- **RQ5 What influence, if any, does gender have on children's information seeking behaviour in respect of each of the elements mentioned RQ1-RQ4.**

These questions were aimed at meeting the overall research goal of understanding how children search for and use information for teacher-imposed tasks in an educational setting. Rather than relying on researcher created or simulated tasks, an investigation was made of information seeking tasks imposed by teachers in line with the curriculum stipulated by the Scottish government. The research goal was not studied in isolation - the intention was to identify behaviours that might then inform the design of classrooms, search systems, libraries, museums and lessons.

I sought to identify differences in the information behaviour between children at the lower and upper ends of the age range of the concrete operational stage

(Piaget and Inhelder, 1969) in terms of their preferences, abilities and needs, and to determine the influences on their choices and, in particular in their notions of success in information seeking. A task-based user study of children's information-seeking behaviour as it relates to everyday school activities was undertaken. Children were observed carrying out information seeking tasks in the classroom with access to the full range of information channels and resources that would normally be available. By considering the design and presentation of a task along with the instructions given, resources available and the environment in which the task was undertaken, and via the involvement of teachers, a rich picture emerged of how the information seeking context of the classroom and the information environments that children experience outside of school impact on how children search for and use information. To achieve my research goals, I spent 6 months in an inner-city primary school in Glasgow, Scotland observing the everyday activities of a **P7** class (ages 11-12 years), a **P5** class (ages 9-10) and a **P4** class (ages 8-9). Ultimately, **P7** and **P5** became the main focus for the study and my observations were not restricted to the classroom e.g. I accompanied children on class visits to a library and a museum. In parallel with my evaluation of the activities undertaken within class time, I evaluated a homework task and explored the information seeking that the children undertook for leisure purposes via a survey and focus groups. The research made extensive use of the artefacts created by children as a result of their information seeking activities to support my understanding of their behaviour in tandem with seeking the teachers' point of view on the work produced.

[Thesis Outline](#)

In what follows I outline the contents of each chapter and give a sense of the contribution that each chapter makes to our understanding of the topic.

Chapter 2 Literature Review begins with a discussion of the key concepts around information seeking; what we mean when we talk about information

behaviour, a discussion of information need, definitions of information retrieval, relevance and a discussion of some of the models that have been proposed for describing information behaviour. Drawing on key theories, the chapter considers those developmental issues that are relevant to the information seeking behaviour of children, such as cognitive development, emotional maturity and gender differences. The chapter continues with a review of the literature on the information-seeking behaviour of children. The contexts in which children seek information and their motivations are discussed and contrasted with those of adults, as are the characteristics of children's search strategies, query formulation and reformulation, relevance judgments and the effects of reading and writing abilities on these. Key characteristics of the studies of child information-seeking are identified such as the age and gender of the children involved and the influence of these factors on behaviour. The study of researcher-imposed tasks versus those that are either teacher or self-generated is discussed and a detailed table presents an overview of studies in the area according to the age of the children involved and the imposer of the task. A discussion of how children view success in information seeking is made, as well as a discussion of the literature on children's use of search engines designed for children, their use of those designed for adults as well as a discussion of how website usability can be experienced rather differently by children than by adults. The chapter concludes by stating the research questions that emerged from the literature review. This chapter's main contribution is in its highlighting of the scarcity of studies of non-researcher imposed or simulated tasks in studies of child information seeking and the need for more studies that compare children's information-seeking at different stages of development, particularly in those aged under 11 years.

Chapter 3 Methodology explains the methodological approach used for the study and how it evolved as the study proceeded. I describe the challenges inherent in answering the research questions generated in Chapter 2 Literature Review, not least the lack of a suitable existing methodological framework with which to frame the study, and my journey in creating my own framework for

data collection and analysis. I make reference to a number of the mostly widely known approaches to studies of information behaviour and explain why I chose an ethnographic approach. I go on to describe the research tools that I employed and explain how these were used, and finish by describing the types and nature of data that were collected and how these were analysed. The contribution of this chapter is in its description of an approach for conducting an ethnographic study of child information-seeking in a school context and in its description of a method for using children's work or "artefacts" to support the exploration of child information-seeking experiences.

Chapter 4 Study Setup begins by describing the education system in which the study took place and outlines the curriculum in use, highlighting those parts of the curriculum that are particularly pertinent to the seeking and use of information. The chapter continues by explaining the concept of *topic work* and outlining the schedule of tasks that the children involved were following, before explaining which tasks were focused on for the study. Each of those tasks is outlined in detail with an explanation of why they were chosen in relation to the five research questions. There is a short discussion of how the methods (outlined in Chapter 3 Methodology) were used to investigate each of the research questions. The chapter continues with contextual information about the setting in which the study took place; the reasons for its choosing, a description of the demographic characteristics of the school in which the study was situated and details of the school environment and facilities. The participants are described, along with the process via which ethical consent was obtained and the significant privacy and other considerations that had to be made before embarking on the study. A discussion of the researcher's role in the school and study is made and, in terms of contribution, the case for the originality of the study setup, in tandem with the methodological approach is made.

Chapter 5 Findings I: Classroom Task is concerned with the findings from the evaluation of teacher-imposed tasks that were entirely classroom-based. It

begins by presenting the results of a poster-making task on the theme of Air Raid Precautions carried out with **P7** (11-12 years) and continues with an exploration of parallel web and book-based tasks on the topics of Air Raid Precautions and Rationing also with **P7** (11-12 years). The chapter continues with a section exploring the findings from **P5** (age 9-10 years) children's performance of an information-seeking task about astronauts that has many parallels with the poster-making task carried out by **P7** (age 11-12 years).

Chapter 6 Findings II: Homework Task is concerned with the findings from a teacher-imposed task that was carried out outside of the school environment, chiefly, a homework task about the Clydebank Blitz sub-topic that was assigned to **P7** (11-12 years).

Chapter 7 Findings III: Leisure Tasks This chapter concludes the findings by reporting on an exploration of the leisure information seeking behaviour of the **P7** (11-12 years) study participants, investigated via a survey completed in school time and several focus groups.

Chapter 8 Discussion In this chapter the findings from all of the evaluated tasks reported in Chapters 5, 6 and 7 are brought together. The findings related to research questions **RQ1-RQ5** are discussed in relation to existing theory. Reflection is made on how well the research questions were answered as well as the limitations of the study. An evaluation is made of the effectiveness of the research approach undertaken and research tools used.

Chapter 9 Conclusion and Future Work restates the case for the contribution of the work. Based on the findings of the study, suggestions are made for ways in which children's information seeking can be better supported. New avenues of research that emerged as the study proceeded are discussed and proposals are made for revisiting those questions that have not yet been satisfactorily answered.

Previously Published Work

Three publications (Nicol, 2014) (Nicol and Landoni, 2014) and (Landoni et al., 2018) have thus far resulted from research undertaken for this thesis. A short description of each follows below:

1. “Using artefacts to investigate children's information seeking experiences”, Nicol, E. in Proceedings of the 5th Information Interaction in Context Symposium, 291-294. This short paper was presented as a poster at the Interaction with Information in Context (IliX2014) conference in Regensburg, Germany in 2014. It describes the focus group method used to explore many of the tasks evaluated in this thesis, using the pieces of work or “artefacts” created by the children as a result of their information seeking. With its focus on the Poster Task, the paper provides an overview of the artefact method described in more detail in Chapter 3 Methodology, reports briefly on the findings of the evaluation of the Poster Task that are reported in full in Chapter 5 Findings Part I and the efficacy of the methods used to evaluate it (Nicol, 2014).

2. “How to Study Children Searching for Fun: Some Experiences and Reflections” Nicol, E., Landoni, M. This workshop paper was presented at the Searching for Fun (eds. Church et al) workshop at the Interaction with Information in Context (IliX2014) conference in Regensburg, Germany 2014. This paper takes a snapshot of the findings obtained from the survey and focus groups described in Chapter 7 Findings Part III. and reports these as part of a discussion of methods for researching the leisure-seeking information habits of children (Nicol and Landoni, 2014).

3. “A Comparative Study into How Pupils Can Play Different Roles in Co-design Activities” M Landoni, E Rubegni, E Nicol. Special Issue of the International Journal of Child-Computer Interaction, 720-725, 2018. By considering the study undertaken for this thesis alongside one carried out by colleagues in a Swiss-Italian primary school setting, this journal paper compares and contrasts the manner in which both research teams and researchers worked with their

respective schools, teachers and children and discusses the variety of roles taken by children in research activities focussed on information and technology (Landoni et al., 2018).

Chapter 2 Literature Review

Chapter Overview

In this literature review, I begin by first outlining the key theories and concepts that are central to the science of understanding information behaviour. These concepts are presented in a general way, undifferentiated by age. Later in the chapter, in Section 3, following Section 2's discussion of developmental issues and the influence that these may have on the information seeking behaviour of children, I will discuss child information behaviour and the ways in which that behaviour is distinct to that of adults. I identify gaps in our knowledge regarding children's information behaviour and, at the close of the chapter, I state the research questions that arose from reviewing the literature in this area.

Section 1: Information Theory and Behaviour

Information Seeking: A Brief Introduction

Information seeking is the process or activity of trying to obtain information. This term is used to refer to its occurrence in both the human and the technological context. The term information seeking behaviour refers to the way in which humans search for and utilise information. The term was introduced by Wilson to address the gulf that existed in researching such behaviour when thinking of information need (defined later) alone as this information need could not truly be directly observed (Wilson, 1981).

Information behaviour has evolved to be understood as the totality of human behaviour in relation to sources and channels of information and describes the whole range of human behaviour in this regard, encompassing both active and passive information seeking and also information use, i.e. to what purpose the information is put once it has been found. Wilson has described information seeking and the related information seeking behaviour as:

“the purposive seeking for information as a consequence of a need to satisfy some goal. In the course of seeking, the individual may interact with

manual information systems (such as a newspaper or a library), or with computer-based systems (such as the World Wide Web)”

(Wilson, 2000)

Marchionini has further described information seeking as a special case of problem solving that:

“includes recognising and interpreting the information problem, establishing a plan of research, conducting the research, evaluating the results, and if necessary, iterating through the process again”

(Marchionini, 1989)

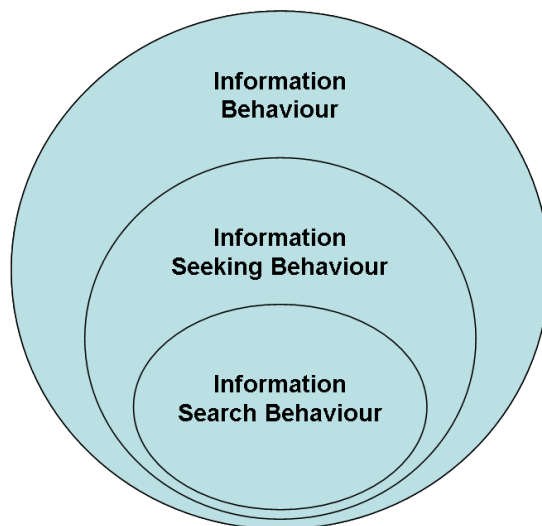


Figure 2.1 - Wilson's Nested Model of Conceptual Areas (Wilson, 1999)

Throughout this thesis, reference will be made to information behaviour, information seeking behaviour and also to information searching behaviour. Often these terms are used, incorrectly, but perhaps understandably, as if they were interchangeable. Wilson's nested model (Figure 2.1) visualises them as discrete but interrelated concepts. Along with information behaviour, already

defined above, he defines the terms information seeking and information searching as follows:

- *information seeking behaviour* is the act of actively seeking information in order to answer a specific query.
- *information searching behaviour* is the behaviour that stems from the searcher interacting with the system in question. The system could be a technological one, such as a searcher interacting with a search engine, or a manual one, such as the searcher selecting the book that is most pertinent to their query.

Wilson has further considered the use to which the retrieved information is used and defines it as follows:

- *information use behaviour* pertains to the searcher adopting the knowledge they sought.

(Wilson, 1999)

While information seeking is an undoubtedly highly complex activity that is very specific to the individual undertaking it, there are a few things that characterise it more generally and I will discuss these briefly here. Information seekers have been observed to conduct their information seeking activities in accordance with the *Principle of Least Effort*. Zipf, in his studies of linguistics, theorised that the distribution of word use was due to the human tendency to communicate efficiently with least effort (Zipf, 1949). This theory became known as *Zipf's Law* and with time his theory began to inform library studies. In the context of information seeking, the implication of this principle is that an information seeker will tend to use the most convenient search method, in the least exacting mode available and that they will stop looking for information as soon as results have been found that are minimally acceptable for satisfying the information need for the task in which they are engaged. Information seekers will always take and prioritise the most convenient path to finding information

that is acceptable for their purposes. The principle holds true regardless of a user's searching proficiency, or their level of subject expertise. Poole investigated the principle further in the context of library searching and found that it held equally for the information seeking of adults and children, as explored later in this thesis. The theory takes into account the user's previous information seeking experience and suggests that a user will use those tools that are most familiar and easiest to use in order to find a result (Poole, 1985). While the principle of least effort was first introduced for information seeking behaviour occurring in a library context, it is now held to apply to any type of information seeking activity.

Whereas information retrieval (IR), which we define in a subsequent section, is focused on technology and on using arithmetical measures such as *recall* and *precision* to measure and define the success and effectiveness of search, information seeking is instead a more human-centred and open-ended process. When a person seeks information, he or she does not yet know whether an answer exists that will fulfil their query. The process that a person undergoes in performing the information seeking may, in itself, lead to the acquisition of knowledge or learning that is required to satisfy an information need. In general, it has been accepted that information seeking is dynamic and non-linear in nature, thus modelling such behaviour poses a significant challenge. Nonetheless, there are a variety of theories and models of information behaviour that have emerged since Wilson first defined the term. There is a large body of research in information science that focuses on information seeking in specific domains, often in different professions such as law and medicine e.g. (Case, 2002). Such research seeks to investigate the information practices that exist in those domains. Studies in such domains have led to models being developed of the behaviour exhibited by those who work in them as they undertake different types of tasks. A large variety of theories and models of information behaviour have emerged from these studies. In a later section of this thesis, many of these models will be discussed in brief and a few key models will be discussed in greater detail. Before moving on to looking at information

seeking behaviour in more depth, I will take a moment to explore information retrieval, in particular, the key concepts that exist within that discipline that have often informed and continue to inform aspects of the theories around information seeking.

Information Need

Central to the study of information behaviour is the notion of information need. If something is relevant for a person in relation to a given task, we could say that the person needs that information in order to fulfil that task. Information need comes from the desire to locate and obtain information to satisfy a conscious or unconscious need. Information need is closely related to another concept in information retrieval (defined later in this section), that of *relevance*, which we will meet in the next section. Information needs may be differentiated into different types depending on the situation in which the user finds him or herself. A person's information need is also influenced by the knowledge domain in which they are operating. In certain situations, information seekers will need an answer to a specific question that requires a definite answer, while in other situations, users will require to embark on an investigative process wherein the information sought is rather more than a simple fact to be found in order to answer the question. This second type of information need arises, typically, when a person is less familiar with a domain (Marchionini, 1989).

Much of the research on information need considers the influence that information need has on the other aspects of the process of seeking information. In one of the most widely cited works on information need, Belkin (Belkin, 1980) proposed that one should think about this need in terms of what he called the anomalous state of knowledge (ASK). This state occurs at that stage in the information seeking process at which a searcher recognises a gap in his state of knowledge. Belkin recognised the difficulties that users of search systems have in formulating queries, queries being the basic unit of interaction with such systems. This difficulty often arises due to an information seeker lacking some

key piece of knowledge to inform the required query. Belkin has suggested that, rather than asking a user to specify his or her need as a request to search systems, it may instead be more suitable to make attempts to describe the user's anomalous state of knowledge (ASK). Other research has attempted to classify different types of information need and to recognise also the nature of information needs as something that evolves and is transformed by and during the information seeking process. Taylor, for example, has described information needs as they occur at different stages of the information seeking process, and outlines them in terms of 4 distinct types: *visceral*, *conscious*, *formalized* and *compromised*. The *visceral need* describes the actual information need before the information seeker has expressed it. The *conscious need* describes the information need once the seeker has recognized it. The *formalized need* is the statement of the need, and the *compromised need* is the query when related to an information system (Taylor, 1968). This evolution and transformation of information need as the information seeking process proceeds and the seeker learns more about the topic about which he seeks information is common to many other models of information behaviour. There have been other attempts to classify different types of information need, for example, Ingwersen and Järvelin in their model of 2005 further defined 8 types of intrinsic information needs according to whether the information need was stable and taking account of factors such as domain knowledge (Ingwersen and Järvelin, 2005).

A Note About Information Need, Self-generated and Imposed Queries

The manner in which an information need has arisen is key to understanding the resulting information seeking behaviour. While many information needs are self-generated, many, particularly in work and educational contexts, are imposed. Gross has described in detail the nature of imposed information needs in her work on information seeking for education (Gross, 1995)(Gross, 2000).

The imposed query view of information seeking behaviour:

“differentiates between information seeking that is self-generated (internally motivated in response to the context of an individual's life circumstance) and imposed information seeking, which is externally motivated, being set in motion when a person gives a question to someone else to resolve. Imposed queries are questions people carry and transact on behalf of others, such as school assignments and company projects. Imposed queries also result from informal relationships, such as immigrant children transacting for non-English-speaking parents and friends and family gathering reading and other materials for each other”

(Gross, 1998)

Gross noted what library professionals, for example, had long been aware of: that poorly understood imposed queries in the form of school or work research assignments can be extremely difficult to negotiate and complete. Despite this, prior to Gross's observation, many studies of information retrieval and library use that investigated the information behaviour resulting from imposed queries had not fully considered the origin of the questions that were imposed. Nor had there been proper attention paid to how the use of a specific transaction type (self-generated versus imposed) might impact on results or conclusions. Following Gross's proposed model for understanding behaviour in these circumstances, increasingly, researchers of information behaviour recognised that the concept of information need must take into account not only the “need to know” of the person seeking but also the need of the person on whose behalf that search is taking place.

In practice, in a classroom situation for example, school pupils can be thought of as acting as *agents* for the *imposer* of queries i.e. the class teacher. Almost inevitably, pupils will in many cases be unfamiliar with the topic about which they have been asked to find information and may have a poorly defined idea of what is expected to be the outcome of a task. This unfamiliarity makes it difficult for the pupil as searcher to know whether his or her information needs have

been met as a result of their querying, and whether indeed they have done enough searching and may therefore cease in their endeavour. Imposed queries are therefore very different from those that are self-generated, and are much more difficult to satisfy also. Where self-generated queries are concerned, the information seeker generally has some existing knowledge that he or she can draw on to assess whether or not the found information does indeed satisfy (or partially satisfy) their information need.

Gross has pointed to the work of Kuhlthau (Kuhlthau, 1993) as being extremely instructive in improving our understanding of how research assignments are conducted. Gross argues that Kuhlthau's work in this area has provided valuable insights into the affective experience of information seekers as they seek information in the context of constructivist educational experiences. Gross has argued further for similar studies of imposed queries performed by other classes of users working in different contexts and moreover has argued for studies that compare how those transactions conducted for imposed queries compare with the equivalent transactions for self-generated queries, with a view to fully understanding how these modes of inquiry compare (Gross, 1998). One well-known and widely cited study that attempted to make this comparison found that children tended to be better at performing self-generated tasks for reasons that were related to domain knowledge or familiarity (Bilal, 2002a). Children were better at finding information that satisfied their self-generated information needs, whereas when they were presented with imposed tasks, they were not able to properly assess relevance nor to assess whether they had found enough information to satisfy the needs of the task.

There is a large body of on-going research that has attempted to understand and classify information needs, more than can or need be covered here. I have limited my discussion to a few examples of related studies that I consider to be particularly pertinent to the issues addressed by this thesis, and I will elaborate further in Section 3 on the characteristics of children's information needs and the attempts to classify and support these.

Information Retrieval

While system-based information retrieval activities are not the main research focus of this thesis, many of the concepts defined in the information retrieval literature have nonetheless informed the work, and much of the literature on children's information seeking behaviour discussed later in this chapter inevitably involves information retrieval processes and systems. This section will provide a brief overview of information retrieval (IR) as it relates to users without specifically addressing issues such as system architecture, for example.

The key definition of information retrieval comes from Salton who has described it as:

"...a field concerned with the structure, analysis, organization, storage, searching and retrieval of information"

(Salton, 1968)

Information retrieval (IR) is an activity that occurs when a user either has a gap or perceives a gap in their knowledge. As we have seen in a previous section, this is known as an *information need*. In IR, the information required to satisfy the information need is assumed to exist. It is further assumed that this information will be present among other *information objects* in a *collection* (van Rijsbergen, 1979). While information retrieval traditionally referred to the retrieval of information that was purely textual in nature it may now also refer to the retrieval of multimedia objects such as images, video, audio etc. expanding the definition of an information object. The means by which the information contained in a collection can be accessed is called an *information retrieval system* or *IR system*. The user has to interact with the IR system in order to retrieve the piece of information required to fulfil their information need. The process of interaction with an IR system proceeds via the user transforming his or her information need into a *query*, which is then submitted to the system. Queries are typically text arising from typing but, increasingly, they may also be formulated and submitted via other modalities such as speech.

In response to the user's query, the system returns a list of *search results* that are subsequently viewed by the user. In viewing this list, generally speaking, some learning about the topic being researched will occur or some new understanding will emerge (van Rijsbergen, 1979). The user will continue to formulate and reformulate queries in an iterative way until a result or series of results is obtained that combines to fulfil the information need. Few information needs can be met following one query and the perusal of one set of resulting search results only. It is more usual for a user to construct a series of queries and to inspect each emerging set of results, incurring an associated learning that occurs on seeing either the result lists or by inspecting the individual list objects themselves. Note that information retrieval systems work rather differently from database systems in that IR is interested in best matches even if the matches are only partial (van Rijsbergen, 1979).

The results retrieved in an information retrieval process give the suggestion of relevance to a user's query and, in turn, relevance to their information need. (Relevance will be discussed in more detail later in this section). Results are generally presented in accordance with a ranking scheme that compares their relevance relative to each other (see next section). These results are then returned in the form of a list of ranked results for the user to inspect. The list generally allows access to each retrieved document or information object so that it may be inspected by the user. Information needs are not, as we have already seen, static, and both the returned list of results and the retrieved objects themselves may on inspection transform the user's conception of the whole process. Borlund described this phenomenon thusly:

"...the relevance or irrelevance of a given retrieved document may affect the user's current state of knowledge resulting in a change of the user's information need which may lead to a change of the user's perception/interpretation of the subsequent retrieved documents"

Borlund in (Agosti et al., 2003)

Information retrieval tools were originally designed with information retrieval specialists such as librarians and archivists in mind, and, with the advent of the web, many of the search tools were built along IR system lines with the same underlying principles as those designed for these information specialists. This ignored the fact that, increasingly, it was lay people who were using the web to access information, with little of the search expertise that IR professionals had to draw on. Query formulation in particular became one of the key challenges. We saw in the previous section that the means of interacting with an information retrieval or search system is via the use of queries. Query formulation involves the transformation of the information seeker's information need into the language required by whichever system is being used. Increasingly, natural language queries are the norm, being understood and widely used on web search engines and other search systems. Typical natural language queries by adults are at the level of two or three words per query. Query formulation remains nonetheless a difficult activity particularly if a domain is unfamiliar to the user. Increasingly, IR researchers have been interested in how more casual users interact with search engines and information in general but there are still large gaps in our knowledge about this behaviour. As the web continues to expand and evolve and the means for accessing it become increasingly available and multimodal, a diverse user base with ever more complex information needs provides many new avenues for active research on this topic.

Relevance and Relevance Judgments

Relevance judgments, also known as *relevance assessments*, play a central role in the information seeking process. To understand what these are we must first define *relevance*. Relevance is a measure of how well a document or information object matches a user's information need and is often described in terms of 'aboutness'. The user makes a judgement as to the relevance of that information object based on his information need, in tandem with his or her own existing knowledge or domain knowledge. He or she will also be informed by the *context*

in which he or she is performing the search, as well as by the results that he or she has seen already and learned from. Relevance serves as a key criterion for evaluating information retrieval performance and is often considered as being one of two main broad types: *system-based relevance* and *user-based relevance*. System-based relevance is algorithmic and concerns matching a user's query with a document's content. User-based relevance by contrast, is focussed more on the user rather than on how the system they are using is operating. Within these categories however, there are other more nuanced descriptions of relevance that have emerged from studying users as they interact with information systems and describe not just the system aspects of relevance and relevance judgements but take account of human factors such as affect, cognitive abilities and behaviour.

Saracevic, for example, described relevance in terms of levels: a lower order and a higher order with several types of relevance belonging to each level or order as described below:

Lower order of relevance:

- *System or Algorithmic relevance*
- *Topical relevance*

Higher order of relevance:

- *Pertinence*
- *Situational Relevance*
- *Socio-cognitive relevance*
- *Affective or motivational relevance*

(Saracevic, 1996)

In the lower order we find:

- *system or algorithmic relevance*, which can also be thought of as the objective way in which a query matches an object, or the other way around. In information retrieval terms this is the ranked output of information objects ranked by a search engine's relevance scores.

This type of relevance is commonly judged by comparing with an expert assessor's relevance assessment of the document and the collection it comes from.

Also in this lower order is:

- *topical relevance*, which describes aboutness: how well subjectively i.e. via human interpretation a query matches an object or vice versa. This type of relevance will involve interpretations. There is a problem in the nature of aboutness in that assessors will often be inconsistent. This type of relevance is used to indicate the relative performance of systems in the main.

In the higher order of relevance Saracevic described 4 types of relevance. The first is:

- *pertinence*, which is defined as the perceived correspondence of objects to an information need. For pertinence we require knowledge of the intrinsic information need for an observer, which can be difficult to obtain. Pertinence is the domain of the information seeker and it may not be achieved in cases where information needs are ill defined. Pertinence also involves other facets of objects other than just those that are topical. It may include for example novelty, authorship, authority etc.

The second type in this higher order of relevance is:

- *situational relevance*, which is the relation that is perceived between the task, situation or problem and the objects that are found as the result of a search. This type of relevance is related to the work task situation or interest. Generally speaking, work tasks are not search tasks. Individual relevance judgements are made in the context and can also be based on simulated work tasks and observed as per (Borlund, 2002).

The third type is:

- *socio-cognitive relevance*, which deals with the group or peer perception of an object. (Cosijn and Ingwersen, 2000) have done further work in the area of socio-cognitive relevance relating it tentatively to organisational strategies, conventions and perceptions and group decisions and peer reviews for example. Socio-cognitive relevance was first proposed as a type of relevance by Ørom in order to associate it to the social context (Ørom, 2000).

The fourth and final category of relevance in this higher order is:

- *affective relevance*, which is what is in play in all subjective assessments. This type of relevance is found in all subjective and higher order relevance types with motivational relevance being somewhat of an attribute to the other relevance types.

With regard to web searching in particular, relevance and relevance judgements are a key area of research at the current time with much still to be learned about how adults make these judgments. Many studies e.g. (Spink et al., 1998) (Spink and Jansen, 2004) (Hjørland, 2010) have looked at relevance and relevance judgements. In addition, such relevance judgments have been investigated in many studies of web searching as searchers pass judgments on material retrieved from web search engines. Despite this, much remains unknown about how humans make the relevance judgements that they do. Still less is known about how children perform the same functions and what differentiates their notions of relevance from those of their adult counterparts. Knowing how to discern these notions of relevance and designing appropriate studies for doing so poses a particular challenge. Additionally, little is currently known about how this concept varies at different points in a child's development, however there have been some attempts to address this. Spink et al (2010) found when they looked at the web searching skills of very young children (aged 4-5 years) that understanding their relevance judgments was key to understanding their behaviour and that, "cognitive abilities such as relevance judgments are an

important element of any theoretical models of young children's interactions with search technologies" (Spink et al., 2010). In the study undertaken for this thesis, while user-based relevance will be the relevance notion that is of key interest, the work will also acknowledge the role that system-based relevance has in the performance of the information seeking behaviour that will be studied.

Models of Information-seeking Behaviour

Over time, many detailed approaches have been made to modelling information seeking (and searching) behaviour. Key models and theories of information theory that have emerged include some that have been mentioned already in this chapter such as Wilson's models (Wilson 1981; 1999), Zipf's Principle of Least Effort (Zipf 1949), Belkin's Anomalous State of Knowledge (ASK) and Gross's Imposed Query Model (Gross 1995). Other models that have been influential on how we think about information behaviour include:

- Sense Making (Dervin and Nilan, 1986)
- Information Skills (Tabberer, 1987)
- The Big Six (Eisenberg and Berkowitz, 1990)
- Information Seeking Process (Kuhlthau 1991)
- Ingwersen's model of interactive information retrieval (Ingwersen, 1992)(Ingwersen, 1996)
- Model A (Byström and Järvelin, 1995)
- Stratified Model for Information Retrieval (Saracevic, 1997)
- Burdick's Information Seeking Search Styles (Burdick, 1996)
- Information Foraging (Pirolli and Card, 1999)
- Life in the Round (Chatman, 1999)
- Cognitive Model (Järvelin and Ingwersen, 2004)

Following on a few years after Wilson's 1981 model, Sense Making (Dervin and Nilan 1986) considered how we attempt to make sense of uncertain situations and relates to how we interpret information to use for our own information

related decisions. It can be thought of as a method by which people make sense of their world using their own language rather than the language of someone outside the process. Many subsequent models such as the Imposed Query Model (Gross, 1995) for example have incorporated aspects of Sense Making. Burdick's Information Seeking Search Styles (Burdick, 1996) is a model that classifies the searcher's ability to focus as well as the amount of involvement or motivation that the searcher has. While a useful model for studying adult behaviour, in common with many other information seeking models, it does not allow for developmental differences therefore it is of limited use in describing children's information seeking behaviour (Druin et al., 2010a). Subject areas such as sociology, linguistics and anthropology have often exerted their influence on theories of information behaviour and this is indeed the case with information foraging model of such behaviour (Pirolli and Card 1999). This model is derived from anthropology and can be compared, as the name might suggest with the process of searching for food by foraging. The model conceptualises searchers as using clues such as links to estimate how close they are to the information that they truly seek. Many of the available models have emerged via the study of users seeking information in a particular domain or context e.g. Kuhlthau's Information Search Process model was developed following studies with high school students who were seeking information for assignments (Kuhlthau, 1991).

It is not my intention to discuss each of the models listed above in detail beyond the descriptions already provided. I will however provide a more in-depth overview of those models that I feel are of particular pertinence to the concerns of this thesis. I will begin with the watershed that was Wilson's 1981 model and will then turn my attention to Kuhlthau's Information Search Process (ISP) model (Kuhlthau 1991) which is of particular interest as it emerged from studies with young people. I then describe Byström and Järvelin's 1995 model (Byström and Järvelin, 1995) of interest due to its focus on tasks. I conclude the section by revisiting Gross, in particular introducing additional aspects of Gross's Imposed Query Model that have not yet been described here. These

aspects are of particular relevance in the context of classroom-based information seeking behaviour.

Wilson's model of 1981, shown in Figure 2.2 below, was one of the earliest models and shows how characteristics such as psychology and demography, and factors related to the role (or roles) that information seekers are playing, can influence the information-seeking process. The model takes account also of interpersonal, environmental and source-related influences on the behaviour. Wilson describes the decision to seek information as being heavily dependent on *motivation*. This motivation may be cognitive in origin or, alternatively, it may have arisen from an emotional need to reinforce previous values, for example. One of Wilson's key contributions was his recognition of how searchers must overcome possible barriers, which are often psychological in nature, before the relevant information is retrieved. In order to feel competent enough to make the final decision to seek information, the information seeker must experience the situation as rewarding (Wilson, 1981; Wilson and Walsh, 1996).

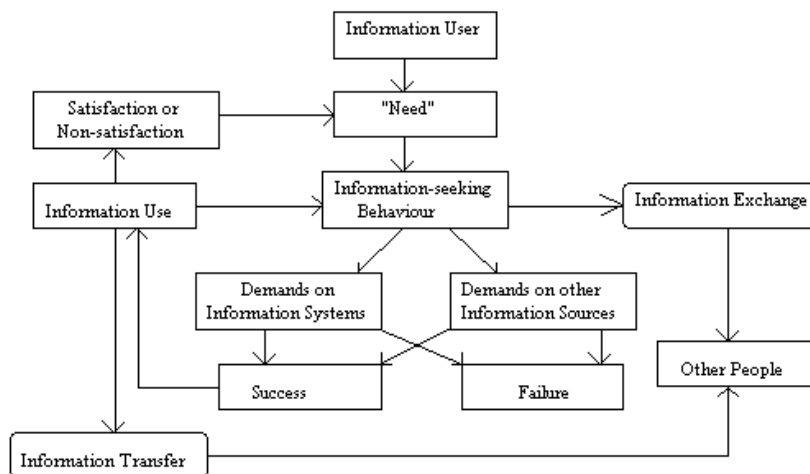


Figure 2.2 - Wilson's Information Behaviour Model (Wilson, 1981)

While this was an early and powerful attempt to describe information behaviour, there were breakdowns in the model that meant that it did not fully describe the range of behaviour that occurs when people seek information. In this and subsequent models, Wilson did however recognise what has since been

observed in multiple studies of information behaviour: that humans do not always act rationally when seeking information. Their behaviour is often random due to their becoming uncertain at many points of the process e.g. (Ingwersen, 1996). This is even the case when the person doing the information seeking knows a great deal about the subject matter about which they are seeking information. This perhaps surprising effect is due to the influence of the search task expectations that they had prior to beginning their search, and is also due to the assumptions that they made about those expectations. This behaviour is further influenced by the domain of knowledge in which the person is currently working at the time of information seeking task, and the context of the situation in which they are conducting their search (Ingwersen, 1996).

Kuhlthau's Information Search Process (ISP)

Kuhlthau's Information Search Process or ISP for short (Kuhlthau, 1991) is a *stage model* that concentrates on the mental aspects of information seeking. The model was generated from phenomenological research investigating the information seeking behaviour of high school children in their school studies and was updated a few years later following additional extensive research. This additional research allowed the model to be extended to describe not only students but also people working in different adult professions. The model is notable for exploring the role that emotions and uncertainty play in the process of seeking information, and reflects Kuhlthau's finding that many searches are abandoned due to the inherent uncertainty involved in carrying out those searches.

Kuhlthau's Information Seeking Process (ISP) is described in terms of 6 *stages* each encompassing 4 *aspects*.

The six *stages* are as follows:

- Task initiation

- Topic selection
- Pre-focus exploration
- Focus formation
- Information collection
- Search closure

and the four *aspects* that are encompassed by each *stage* are:

- *Cognitive*-what is to be accomplished
- *Affective*-what the searcher is feeling
- *Actions*-what the searcher did
- *Strategies*-what the searcher was trying to achieve

The table below (Table 2.1) shows in detail what the user is doing at each stage and how each of the aspects is addressed at each stage of the process.

Stage 1 Task initiation			
<i>Thoughts (Cognitive)</i>	<i>Feelings (Affective)</i>	<i>Actions</i>	<i>Strategies</i>
Contemplating assignment, comprehending task, relating prior experience and knowledge, considering possible topics	Apprehension of work ahead, uncertainty	Talking with others, browsing library	Brainstorming, discussing, contemplating possibilities, tolerating uncertainty
Stage 2 Topic selection			
<i>Thoughts (Cognitive)</i>	<i>Feelings (Affective)</i>	<i>Actions</i>	<i>Strategies</i>
Weighing topics against criteria such as personal interest, project requirements, information available, time	Confusion, sometimes anxiety, brief elation (after selection), anticipation of task	Consulting informal mediators, using reference collections, preliminary searches	Discussing possible topics, predicting outcomes of choices, gaining general overview of topic

available; predicting outcome of possible choices, choosing topic with potential for success			
Stage 3 Pre-focus exploration			
<i>Thoughts (Cognitive)</i>	<i>Feelings (Affective)</i>	<i>Actions</i>	<i>Strategies</i>
Becoming informed about general topic, seeking focus in general information found, identifying possible foci, inability to express precise information needed	Confusion, doubt, sometimes threat, uncertainty.	Locating relevant information, reading to become informed, taking notes, making bibliographic citations	Reading to learn about topic, tolerating inconsistency and incompatibility of information encountered, intentionally seeking possible focus, listing descriptors
Stage 4 Focus formation			
<i>Thoughts (Cognitive)</i>	<i>Feelings (Affective)</i>	<i>Actions</i>	<i>Strategies</i>
Predicting outcome of possible foci, using stage 2 task criteria, identifying ideas in information to form focus, sometimes characterised by a sudden moment of insight	Optimism, confidence of ability to complete task	Reading notes for themes	Making a list of survey notes, listing possible foci, choosing a focus while rejecting others OR combining several themes to form one focus

Stage 5 Information collection			
<i>Thoughts (Cognitive)</i>	<i>Feelings (Affective)</i>	<i>Actions</i>	<i>Strategies</i>
Seeking information to support focus, defining and extending focus through information, gathering pertinent information, organising information in notes	Realisation of extensive work to be done, confidence in ability to complete task, increased interest	Using library to collect pertinent information, requesting specific sources, taking detailed notes with bibliographic citations	Using descriptors to search out pertinent information making comprehensive search of various types of materials i.e. reference, periodicals, non-fiction and biography, using indexes, requesting assistance of librarian
Stage 6 Search closure			
<i>Thoughts (Cognitive)</i>	<i>Feelings (Affective)</i>	<i>Actions</i>	<i>Strategies</i>
Identify need for any additional information, considering time limit, diminishing relevance, increasing redundancy, exhausting resources	Sense of relief, sometimes satisfaction, sometimes disappointment	Re-checking information for information initially overlooked, confirming information and bibliographic citations	Returning to library to make summary search, keeping books until completion of writing to re-check information

Table 2.1: Kuhlthau's Information Seeking Process (Kuhlthau, 1991)

Gross's Imposed Query Model (Gross, 1995)

We encountered Gross's model earlier in this chapter in our discussion of information needs and discuss it further here with regard to its other features. While the majority of models of information seeking behaviour assume that individuals seek information and interact with information systems in response

to their own, self-generated information needs, Gross's model accounts also for information seeking that is externally motivated. Such information seeking is the result of what Gross calls an *imposed query*. With imposed queries, the query is imposed by an *imposer* e.g. a teacher, on an *agent* e.g. a student, who will perform the information seeking. Although this type of scenario and behaviour has long been a familiar and is, one might say, an everyday phenomenon, in recognising this dimension of information-seeking, Gross's model provided a new way of thinking about who the information seeker is by making a distinction between questions that are *self-generated* (internally motivated by personal context) and those that are *imposed* (thought up by one person then given to someone else to resolve) (Gross, 1995). Imposed queries are passed, for example, from employers to workers and from teachers to learners, and are also carried out by individuals on behalf of friends and family members. The model describes how queries evolve as they pass between imposer and agent. The key features of the model are outlined below:

- IQ1: Initiated-the query as represented by the imposer.
- IQ2: Transferred-the mutual understanding of the query as developed in the transfer process from the imposer to the agent.
- IQ3: Interpreted- the query as the agent has stored it.
- IQ4: Negotiated- the query as mutually understood by the agent and the intermediary, such as a librarian.
- IQ5: Processed- the query as understood by the agent in light of the resource(s) used to respond to it.
- IQ6: Evaluated-the query as understood by the imposer in relation to the response provided.

Imposed Query Model adapted from (Gross, 1995) by (Folk, 2016)

As well as addressing the differences between the behaviour resulting from self-generated and imposed queries, an effect of this model has been that it has highlighted the need to rethink the definition of user. Is the agent the user or is

the imposer the user? Should they both be regarded as users throughout the process or do the roles change at different points in the process? In addition, the model highlighted a need to try to identify whom the imposers and agents in imposed information seeking are and also a need to explore what circumstances and relationships motivate their behaviour. This model also raised questions around how user behaviour differs depending on question type e.g. do users do the same things and construct meaning in the same way when researching self-generated questions as they do when performing imposed queries, and what ways do these differ?

Byström and Järvelin's Information Seeking and Retrieval Model (1995)

Byström and Järvelin have produced a large body of work on task-based information seeking since the 1990s, the signature work being their model (Byström and Järvelin, 1995) illustrated in part by the work chart depicted in Figure 2.3 below. Their model provides a qualitative method for task-level analysis of the effects of task complexity on information seeking. The approach taken by Byström and Järvelin is of particular interest for the purposes of the study described in this thesis due to the focus on task types, task complexity, and information sources. While their empirical research for this model was chiefly conducted in the adult world of work in a public organisation, it is clear, from examination, that the model has a good degree of applicability in certain educational contexts also. Their work considered also the *situational context* in which a user is operating, the *characteristics* of the work task to be carried out, the information seeker's own *interests*, his or her *perceptions*, his or her *uncertainty*, as well as his or her *information need* in performing tasks.

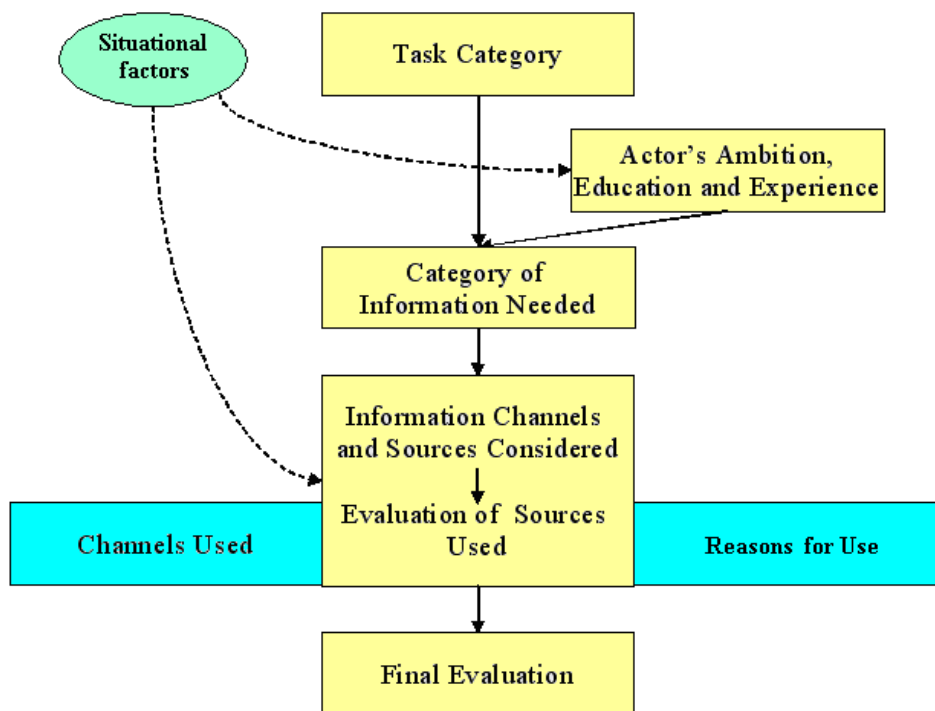


Figure 2.3 - The Work Chart (Byström and Järvelin, 1995)

They hypothesised that the more complex the situation and the more complex the work task at hand, the greater the uncertainty and knowledge gap (Byström and Järvelin, 1995). Via empirical research, they showed that as an information problem becomes less clear and therefore increasingly ill-defined then complexity increases. They argued that given the impact that search task complexity has on behaviour, particularly on relevance assessments or judgements, the design of systems for the retrieval of information should support cognition. This model gave great consideration to the task types and information sources that are available for users to use to complete those tasks.

By classifying tasks according to complexity (of this, more in the section on Tasks and Evaluation) and by classifying information sources into seven discrete types, they were able to discover how task complexity affects both the types of information source chosen but also the number of sources used to complete the task. They classified these into types of information sources as follows:

- fact-oriented:
- registers (manual and computerised catalogues and files)
- commercial databases
- problem-oriented:
- the people concerned (for example, people proposing, or affected by, administrative actions)
- official documents (for example, agendas, meeting minutes, letters, applications, memoranda, maps, unpublished planning documents)
- general-purpose:
- experts (including knowledgeable colleagues)
- literature (for example, books, reports, journals, newspapers)
- personal collections (personal notes, calculations, etc.)

They also gave additional classification to these sources by describing them as either internal or external to the organisation in which the user works or is operating.

(Byström and Järvelin, 1995)

In a study conducted in the context of public administration they found that, as task complexity increased:

- the complexity of the information needed increased
- the needs for domain information and problem-solving information increased
- the share of general-purpose sources (experts, literature, personal collections) increased and that of problem and fact-oriented sources decreased
- the success of information seeking decreased
- the internality of channels decreased, and
- the number of sources increased

(Byström and Järvelin, 1995)

Their findings, in particular the differences between simple and complex tasks, underline the importance and consequences of task complexity on information seeking. Where complex tasks were concerned, understanding, sense making and problem formulation were found to be essential and required both different types of information as well as more complex information. This information was gained through somewhat different types of channels for different types of sources. The other key finding from this work was that for all task complexity categories, very few channels were used to locate the sources.

A Note About Information Sources

Increasingly, those modelling information behaviour recognise that people go to other people as potential sources of information when they are in pursuit of information. Work by Wilson and others e.g. Byström and Järvelin above, showed how information seekers use other people as information resources alongside their use of information sources that are paper and electronically based (Wilson, 1999)(Byström and Järvelin, 1995). Gross has noted however that models often fail to recognize that the default behaviour, when the “person resource” does not have the answer, need not necessarily be an interaction with information providing objects, organizations, or systems. Instead, the person seeking information may ask someone to find the answer for them (Gross, 1998). This can occur equally with imposed queries as it can with self-generated tasks when there is for example a linguistic or technological barrier that prevents the information seeker from carrying out the search on his or her own e.g. children of immigrant parents who carry out information seeking tasks on behalf of relatives who lack particular language or computer skills. There are observable differences in how people seek and use information from human sources e.g. workplace studies such as that of Robinson suggest that, when seeking information at work, people rely on each other i.e. colleagues or others around them, as well as on repositories of information (Robinson, 2010). When their use of people as information resources is compared with their use of

information repositories, information seekers spend less time on locating the information source and information within that source, similar time on making sense of the information, and more time on problem solving and decision making. Children have been observed in many studies to make heavy use of other children and adults in information seeking tasks and this will be further explored in subsequent sections of this chapter.

Tasks and Evaluation

In any discussion of information seeking behaviour, the role of tasks in the process must be central, as should the evaluation of the process. In addition to the work by Byström and Järvelin, tasks have been studied in depth by a number of researchers over the years with various attempts to describe and explain and classify their complexity and to understand how task type and task design can influence a user's information behaviour. Task complexity is important for many reasons, not least because it has an effect on how searchers perceive their information needs (Vakkari, 1999), which has a subsequent effect on how they then try to find information to satisfy that information need (Byström and Järvelin, 1995).

Byström and Järvelin (1995) were similarly interested in the influence of task type on information seeking behaviour, defining 5 basic types of task and these are described in what follows. These *work tasks* or *interests* (often thought of as socio-cultural) can exist either objectively i.e. in the environment or subjectively i.e. in the mind of the person doing the information seeking. Regardless of objectivity or subjectivity, these work tasks are perceived by the information seeker (or actor) to be fulfilled or solved by means of action, that is to say by employing search tasks as a means to an end. Byström and Järvelin further defined work and search tasks according to complexity in 3-5 categories: *decision tasks* (genuine or known), *normal tasks* (those that involve decisions or information processing) and *routine* or *automatic tasks*, which are those that involve information processing (Byström and Järvelin, 1995). They described

the complexity of a task as being dependent on the amount and type of information that is required, the domain knowledge and the task solving. Models such as those emerging from the work of Byström and Järvelin have been influential on many subsequent studies, and the importance of the influence of task complexity has been acknowledged by authors such as, for example (Bell and Ruthven, 2004) in their work investigating searchers' ability to find relevant information with search engines. Bell and Ruthven identified searchers' abilities to recognise the internal complexity of tasks and noted that this complexity is affected by task design. They further showed that complexity affects the success of searching.

This known influence of task type and task design on information seeking behaviour raises questions about how evaluations of information seeking should be carried out. There has been a tendency in more recent times to favour a more naturalistic approach i.e. asking the user to carry out information seeking tasks in his or her usual environment with all of the information sources and tools available that would normally be the case for the context or domain in which she or he is searching. The key difficulty with conducting this type of study is sourcing or creating tasks that are similar to that which the information seeker would normally encounter. Authenticity is hard to achieve and bias naturally results (Borlund, 2003)(Saracevic, 1997) when attempting to design such tasks. There have been attempts to simulate work tasks to improve studies that are lab-based and indeed Borlund has provided a detailed methodology for doing so e.g. (Borlund, 2003) that has been adopted and modified by many subsequent studies.

While a more in-depth consideration of appropriate evaluation of search tasks will be central to the methodological discussions of Chapter 3, I will briefly consider here the approaches that are available for the study of information seeking behaviour with reference to tasks, and will refer to studies that have taken such an approach both for adult and child information seeking. Lab-based studies have been used many times in investigating information seeking

behaviour, often using simulated tasks in a controlled environment. Lab studies attempt to approximate a user's real environment in order that researchers might study issues that they can control and define with a narrowing of focus. Lab-based studies and those taking place in certain other locations can be further enhanced by logging the activities that are undertaken as the information seeker completes his or her tasks. Indeed, log file analysis can be a powerful way to understand how users interact with information without the biases that arise from using an observer to perform this role for example. However, in many if not most settings, searchers are using a variety of information sources that are not purely systems-based and that combine resources from the system with those found or acquired offline, meaning that much of the information seeking story can be missed. It might be argued that log analysis should be performed anyway in parallel with any ethnographic work, but effective synthesis of two such different sets of data can be extremely difficult to achieve, and poses a heavy workload for the researcher, particularly if working alone. When using logs, it is always of course necessary to exercise some caution about what has been collected. Little of the intention behind the searches can be known. Only part of the reaction to these search results can be discerned in this way and it is difficult to use this approach to make definitive conclusions as to why behaviour seen in the logs has occurred. It is therefore advisable that any such study would have to be complemented by a naturalistic approach such as observation to allow the researcher to know the search goals of particular tasks to then be able to link this to the behaviour observed.

Naturalistic approaches to studying information seeking behaviour involve users performing the tasks they usually do naturally, as they occur and within a familiar environment. Such an approach can give realness to the research that other approaches cannot. As the tasks are real and not devised or otherwise artificially created by the researcher, users are able to utilise their own experience and previous knowledge to complete the tasks as well as any of the usual information sources they would generally have available in the situation.

Naturalistic approaches can be applied by using fieldwork or ethnography or by using log file analysis.

Ethnographic and field work have limitations in that they require the researcher or researchers to be present at all the times when information seeking is taking place, which, during a working week, for example, involves a large outlay of time and effort. Such studies are limited also in the fact that only small numbers of participants can be studied at one time, but they can provide a richness in describing the information seeking mechanisms at play that log file analysis alone is not able to provide, for example. One subsection of one domain of users is all that may be studied at one time but it can be done in a deep and far-reaching way. However, there must be caution always about extrapolating results to the behaviour of a general population of similar users. Due to the researcher not being constantly available, the researcher must choose who and when to observe which may have an effect on findings; which groups to choose, which task or tasks, whether to choose to follow the same group throughout, or to observe the same task as completed by multiple groups, or to embark on a study that involves a combination of these approaches.

There is also the question of the influence that researchers have on the search process when research is done in the lab rather than in a more naturalistic setting. In addition, bringing the study to the lab immediately removes the many information channels that are normally available to a user and is probably only truly appropriate for a limited number of scenarios. The lab is absent of the usual human information resources that Wilson has spoken of, for example. None of the user's usual channels such as his or her own phone, diary, manuals, letters, documents, telephone, information leaflets and posters are around (Wilson, 1999). And when considering the evaluation of child seeking information in particular, the lab setting has a formality that may not be appropriate for uncovering true attitudes and behaviour.

Section 2: Children as a Special Type of Information Seeker

Section Overview

In this section I explore the developmental differences that relate specifically to cognitive ability, which suggest that children should not only be treated as a special category of user or searcher distinct from adult information seekers, but also, that in studies of information seeking, that children should be considered as distinct from each other, dependent on age, due to the differences in abilities and attitudes that manifest at various points between 0 and 18 and years. (NB that neuroscientists increasingly agree that the human brain generally reaches full maturity at a point much beyond 18, in the early to mid-20s, which may come to influence future studies of information-seeking behaviour). Given these differences, those studying children's information behaviour should have some awareness of cognitive development and related theories in order to be able to assess the impact that this has on the behaviour. Such theories have long been built upon by researchers of human intellectual development, such as, for example, in the work of Cooper, who comments on how children's cognitive abilities inform their interactions with digital technology (Cooper, 2005). There is much besides in the cognitive science literature about the abilities of children at different ages and stages of development that can inform our understanding of the information behaviour of children. In this chapter, as well as drawing on cognitive science and *information processing theory* to consider the abilities of children, a brief discussion will be made of those studies that have investigated the mechanical and other skills of children with respect to information seeking and searching, with commentary on how these contrast with the typical equivalent skills and abilities in adults.

Child Development

Here I consider the impact that developmental stage has on children's interactions with information. When considering cognitive development, the most widely cited theories are those of Piaget et al e.g. (Piaget and Inhelder, 1969). These form the basis of much educational research and theory. Piaget's

theory concerns the abilities of human beings at different ages, and describes human development as a sequential order in which the knowledge, ability and skills that accrue as one develops, build upon those pieces of knowledge, ability and skill that were developed during previous stages of development. Piaget considered the stages of development as occurring in four observable stages that map to approximate age ranges. These stages, and the age ranges to which Piaget believed they correspond, are shown in the table below (Table 2.2). The equivalent school stage in Scotland, where the study described in this thesis took place is provided for reference.

Age (years)	Developmental stage	School stage (Scotland)
0-2	Sensorimotor	n/a
2-7	Pre-operational	Pre-school-P2
7-11	Concrete operational	P3-P6
11-18	Formal operational	P7-S6

Table 2.2 - Piaget's Developmental Stages

As might be surmised when considering these stages of development, the age boundaries are very much approximate and fluid and vary a great deal from child to child. Additionally, the speed of development also differs from child to child, with differences being due in part to the environment in which the development takes place and also to the many influences that the “environment” entails and implies. A human being may be considered to be in multiple different stages of development simultaneously if his or her understanding of different concepts is considered e.g. social skills or spatial reasoning abilities. Research has shown that there are gender differences in cognitive ability and development, with girls tending to be better verbally and socially more developed than boys, with boys tending to have better mathematical skills. These differing abilities at different stages of development

can influence the information needs of children, and, further, these differences can impact and influence how a child is able to approach the information need and can influence how a child chooses to approach that need. These differences in approach and choice of approach also have a strong demarcation between different age ranges.

The four development stages outlined by Piaget for typically developing children i.e. those without learning or other developmental disabilities, are described in what follows:

- *Sensorimotor stage: (0-2 years)* at this stage, which occurs in very early childhood, a child begins to recognise cause and effect relationships in the world immediately surrounding him/her but cannot yet think about or conceive of objects another than those that are directly in front of him/her.
- *Pre-operational stage: (2-7 years)* at the early part of this stage children are learning to use language. They are often thinking in a way that would be considered illogical by adult standards. Children at this stage are generally thinking in a way that is wholly self-centred. They may also experience problems with classification, only being able to classify objects in terms of one descriptive feature e.g. colour or shape. At the older end of this stage, typically developing children will be able to gain pre-reading skills such as being able to form some letters on paper or other writing medium. They will be able to say simple words. They will also have the ability to acquire additional vocabulary and to begin to recognise simple words when written down, all of which are skills that are regarded as pre-requisites for being able to gain reading skills.
- *Concrete operational stage: (7-11 years)* in much of the developed world, at this stage of development, children will attend school or be

otherwise in receipt of formal education. They will tend to employ a trial and error approach to carrying out tasks and will be beginning to reason logically. Their understanding will be limited however to concrete and physical concepts rather than abstract concepts, which at this stage are rather more difficult for them to master and comprehend. By this stage they will now also be able to classify physical objects according to several features such as size, shape and colour and be able to order objects according to one characteristic e.g. size. At the beginning of this stage children will be starting to be able to read simple books and are likely to have a vocabulary of around 100 words, with writing abilities emerging a little later. By the end of this stage, children will be able to write and understand stories that contain character, action and settings that are highly detailed in nature.

- *Formal operational stage: (11-15 years)* Children will tend to be fully developed cognitively when this stage ends in their mid-teens. Children in this stage of development are learning to understand abstract concepts via the use of logical thinking. Aged 11-13 years, children are learning to read about their hobbies and other topics that are of interest to them. They will generally read for the purpose of their school studies and will now understand much more of the content of what they are reading. They will also be able to read and enjoy longer fiction and non-fiction texts than before, which may include books and newspaper articles. At this point, children's writing skills are more fully developed and they will now understand and know how to employ more correct spelling, grammar and punctuation when they write. The writing will now be far more fluent in style and they should also be able to use the reading and writing skills they have acquired to perform similar tasks involving reading and writing with the use of digital technology, as they are able to do on paper and with other media. As children grow older and experience

more of the world around them, their knowledge about that world increases. They are increasingly able to plan and to strategize for the tasks ahead of them by employing less cognitive effort that is required in their younger years.

This thesis is chiefly concerned with the information seeking behaviour of children in primary school. Accordingly, I will explore the *concrete operational stage* of development in more detail before considering in brief also the *formal operational stage*, which, in the Scottish context of this study, children will be entering just as they leave primary school. Children at the concrete operational stage can think logically about objects and actions and are able to manipulate them in their minds without having to physically manipulate visual data that is available to them (Ginsburg and Opper, 1988). They are able to reverse their thinking and can also understand reciprocity. Crucially, this is not the case, according to Piaget, at the two earlier stages of development. A reason for this is, while in the pre-operational stage there are limitations caused by egocentricity, once the concrete operational stage has been reached, this egocentricity has largely gone. (Egocentricity being the phenomenon whereby a person believes that all others see the world as they do and has a tendency to confuse appearance with reality). Once liberated from this egocentricity, a child can then realise that problems are often multi-faceted and that there is more than one way of viewing a situation, and also that appearances may not be what they first appear (Kail, 2004).

While Piaget's stages are undoubtedly useful, we can regard Piaget's theorem as being rather more rigid than is really the case. Later cognitive theory has criticised Piaget for being too universal and stage-like e.g. (Flavell, 1971). For example, he claimed that children are unable to learn concepts that are characteristic of later stages, however later research has shown that when given appropriate instruction, children can be taught certain concepts before Piaget suggests they should be able to learn them (Kail, 2004). At the same time, some children do not always master those concepts that are supposed to accompany

their stage of development e.g. Piaget tends to overestimate the skills of the children at the *formal operational stage*. Young adolescents, boys in particular, often have not achieved the skill level in their reading and writing that he claims for them and teachers working with pupils this age may, due to Piaget, assume that their students can always think logically in the abstract, yet this is often not the case (Eggen and Kauchak, 2001). Further criticism has been levelled at his work for not accounting enough for domain differences e.g. (Keil, 1992) and cultural influence on the intellectual development of children (Goswami, 2010). In addition, Piaget has been criticised for minimising the impact of individual differences in ability e.g. (Gardner, 1983). In the next section we will consider how developmental differences such as those discussed in this section might impact on a child's ability to process information of different types at different stages in his or her life.

Information Processing Theory

The ability to process information changes with age (Kail, 1991). While there have been many variations on, and diverse descriptions of information processing theory, the main idea in relation to children is that their information processing abilities differ from those of adults in terms of how they apply information to tasks. Other differences in information processing ability between adults and children relate to differences in memory between the two groups—we will see more of this later in this section. The number of concepts that children are able to represent and then process is limited when compared to similar abilities in adults.

Thinking is highly dependent on three elements of memory for success: *sensory memory*, *working memory* (or *short-term memory*) and *long-term memory*. External and internal stimuli e.g. visual and audio stimuli are received and stored in the sensory memory. This information is stored for a few seconds only e.g. visual stimuli can be retained for 0.5 seconds approximately (Sperling, 1960) while sound information can be held for at least 4 seconds (Darwin et al.,

1972). Following this storage in sensory memory, subconscious processing determines whether information should be transferred to the working memory or should instead be discarded. Problem solving or the construction of new strategies, known as “active thinking”, requires the use of information stored in the working memory. This type of thinking occurs when information in the sensory memory is used in combination with information from the long-term memory. Information that is not further processed by moving it to the long-term memory to be stored is lost. Long-term memory has no real limits in terms of the amount of information that it can store, or in terms of the time period over which it can be retained. Information in the long-term memory is rarely forgotten but can be difficult to retrieve (Kail, 1991). The capacity of working memory is approximately seven units (Miller, 1956). The table below (Table 2.3) shows the characteristics of working and long-term memory in typically developed adults and the contrasts between these.

Type of memory	Capacity	Information storage
Working	Limited (span 7+/- 2 items)	Rapid loss of information
Long-term	Huge	Reliable

Table 2.3 - Characteristics of Working and Long-term Memory in Adults

How then do these memory concepts and abilities relate to children? Small children are constantly learning new skills. They do this using their working memory. Having far less experience of the world than older children or adults, for young children, information processing requires a great deal more working memory in order to succeed. Once children have managed to perform a task, information from the underlying process used to perform it is transferred to the long-term memory. The working memory now has some space free, meaning that the child can now learn new tasks. Older children need less time to perform more complex tasks involving more processes than do younger children, as they are able to retrieve some of what they need from long-term memory and so can

perform these tasks automatically. Younger children's memory is not yet sufficiently developed compared to that of older children and adults, which means that they need to think about the processes required. This additional thinking leads to a large load on the capacity of the working memory. Working memory for visual and verbal information increases with age (Schneider and Sodian, 1997) (Schneider and Pressley, 2013) with younger children requiring a greater amount of time to perform the same processes than older children (Kail, 2015).

The most fundamental assumption at play in the various theories of information processing is that the very act of thinking is information processing. Siegler described what children do in such a context as not focusing on development but rather on "the information that children represent, the processes that they apply to the information, and the memory limits that constrain the amount of information they can represent and process" (Siegler, 1991). This sort of approach can be more precise than that outlined by Piaget because age-related cognitive growth is analysed based on a child's abilities to process information.

When learning a skill or a task, information is stored in the working memory. Lacking the experience of older children and adults, younger children require a great deal of working memory capacity to process information. As experience is gained, some of the processes that a child has mastered make the transfer to the long-term memory, which means that space is gained in the working memory that allows for new tasks to be learned. As a result, older children have a greater chance of success at complex tasks than younger children do due to their being able to perform some processes automatically (Hale and Fiorello, 2004). Younger children on the other hand, are thinking about all or at least most of the processes, which puts a great strain on their working memory (Kail, 2004), so younger and older children who are able to perform the same tasks will likely experience a big time difference in doing so. Kuhlthau has some reservations about children in the concrete operational stage (7-11 years) due to their difficulties with abstract thought. Abstract thought is, she considers, necessary

to carry out multi-source searches (Kuhlthau, 1988). In general, children have not gained this skill until the age of 11 years, whereas Piaget believes that by this point children are in the formal operational stage, the final stage of intellectual development. This, arguably, is why so much research on child information behaviour has been conducted with children aged 11 years and above, with the behaviour of younger children being somewhat neglected. Cognitive differences aside, there are also physical differences between adults and children and between children at different stages of development that mean that certain input styles are can be particularly challenging for children e.g. children continue to find mouse and trackpad gestures a challenge, especially in their younger years, even if they have mastered, for example, touch gestures such as swiping and tapping (Lu, 2018).

Cognitive development may also be considered in terms of problem-solving abilities. In the formal operational stage (11-15 years) children “have the ability to formulate, test and discard the whole range of possible solutions to a problem until an appropriate solution is found” (Tuckett and Stoffle, 1984). This is essential to problem solving. Children at 12 or 13 years of age and older can become effective problem solvers, while younger children need more help with solving problems. These changes in ability also impact on the tools and study methods that may be used for investigating information behaviour. In many cases these methods may require to be adapted depending on the ages of the children involved.

In psychological terms, a child is immature in what is known as the *emotional domain* (Erikson, 1993). This immaturity leads to a desire for *emotional support* as well as a need for a feeling of success and increasing confidence in much of their interaction with the world. This is especially the case between the ages of 6 and 12 in the stage that is described as “industry versus inferiority”. Children in this stage are generally keen to learn and also to show off what they have produced as a result of their learning activities. See, for example, the use of drawings produced by children to encourage discussion about experiences with

digital technology e.g. (Nicol and Hornecker, 2012). In addition, children are often keen to gain the skills that appear to be necessary and important in their context and to win recognition from parents, carers and peers in doing so. Finding information to fulfil information needs can be regarded as a necessary and important life skill and is clearly something all children need to develop in order to fulfil social, educational and other life goals. Children feel an increased sense of competence and self-confidence when they succeed in a task of this nature. Conversely, when they cannot achieve such a task, they may feel incompetent, unconfident and inferior to others. The case for gaining a better understanding of and supporting better information seeking for children is therefore a compelling one.

Section 2 Summary

Most primary school children are in the *concrete operational stage* of cognitive development according to Piaget's theories. At this stage (age 7-11 years approximately):

- Children can employ trial and error and reason logically but find abstraction difficult.
- They can classify objects by several characteristics and order them by one characteristic only.
- They can understand that there is more than one way of viewing a situation and also that appearances may be deceptive.
- Children at the lower end of the banding are likely to take longer to complete complex tasks than children at the upper end, due to differences in working memory, and would struggle to use multi-source searches for tasks.
- While children throughout this stage are likely to need emotional support in tackling information tasks, children at the younger end are likely to require more of this support as well as having a greater need for a sense of success in completing tasks than older children do.

- Children at this stage are keen to show off their work, which is something that researchers could surely make use of, particularly while the tools for investigating information behaviour are known to need adaptation for research with this age group.

While most children at primary school will be in the *concrete operational stage*, some of the oldest pupils will be entering the *formal operational stage* where:

- They will begin to cope with abstract concepts, in a marked difference to children still in the concrete operational stage.
- They will be able to read and produce longer more detailed texts than younger children, which has implications for the study of child information behaviour, given the central role that text tends to play in the process.

There are further differences related to child development to be considered:

- Girls tend to have slightly better language and social skills than boys, which may have implications for their respective interactions with information.
- Physical differences between adults and children and between children at different stages of development mean that certain input styles and methods are can be particularly challenging for children to use.

Section 3: A Review of Literature on Child Information-Seeking Behaviour

Section Overview

In the previous section we saw that children's information processing skills are affected by developmental factors, and how this differentiates them from adults. The case for considering children as a special type of information seeker is further bolstered by evidence from the many studies that we will encounter in the current section. While not exclusively concerned with child information-

seeking behaviour, the work of the Nielsen Norman group (2010), is one of the largest empirical studies from which insights regarding children's interactions with digital resources can be drawn. The observable differences in behaviour in these studies that were attributable to age, and also to gender in combination with age, showed that these two factors have an effect that is more pronounced in children than is the case in adults. The results provided evidence that careful consideration should be given to both of these factors when investigating children's interactions with electronic information resources, and also when designing for those interactions. In this section I will review further empirical literature in the area of child information seeking and reflect on how well these developmental issues have been accounted for or reported on with respect to information needs, querying, browsing, and relevance judgments, among other elements. I will also discuss research that reports on children's use of search engines, including those specifically designed for children. The studies discussed in this section involved children from a variety of age groups engaged in searching in many different settings and contexts and, while I have not found it salient to organise the section along those lines, the details will be outlined as they arise.

Information Seeking Context

Much as is the case with adult information seeking behaviour, in order to fully understand how children seek information, careful consideration of the *context* in which the information seeking is happening should be made. Context is strongly linked to *motivation*, which will be discussed later in this chapter. While definitions of context in relation to information seeking vary, context can encompass the time and place when and where an information need arises, the purpose of the information seeking (including the concrete task for which it is sought), the demographic, social, professional, educational and behavioural characteristics of the person or persons seeking the information, as well as the processes associated with that information seeking.

An important feature of child information seeking is the presence and influence of other people e.g. parents, teachers, siblings and peers. More so than adults, and, particularly in their younger years, children carry out information seeking tasks with the involvement or supervision of other human beings, e.g. teachers, classroom assistants, school librarians and, indeed, other children. Despite this, surprisingly few studies have examined in any detail the role of these other actors. Often this has been due to studies of children's information seeking being conducted in the lab rather than in a realistic information context. A few early studies, pointed to the frequency of involvement of other actors in the information seeking processes of children and to the need to examine this further, for example Shenton and Dixon (Shenton and Dixon, 2003a). Those studies that have attempted to identify the impact that child collaboration with other actors has on their information seeking behaviour have not been particularly conclusive, however. For example, Druin et al studied children's collaborative use of digital library interfaces but drew no strong conclusions about the extent to which their information seeking is facilitated or enhanced by their collaboration with others (Druin et al., 2003).

Druin et al (Druin et al., 2010a) highlighted a need to focus not only on the school context but also on searches performed at home where the other actors in the child information seeking process such as teachers and librarians are not around, and where parents do not always have time to give their full support to querying or assessing the relevance of results. However, such studies are inevitably difficult to design and arrange. Druin has argued for a more general understanding of children's information seeking behaviour that considers the prominence of the Internet and the growing number of children who are searching the web at home (Druin et al., 2010a) and, a few years on, with the web being close to pervasive in all aspects of life for many people, it is increasingly difficult to disagree. Outwith formal educational contexts, children are increasingly carrying out searches for leisure purposes with more limited involvement from adults than is the case in the classroom. Given that leisure searching generally occurs at home or, increasingly, on the move, conducting

studies to understand behaviour in such contexts is of real interest but poses a serious challenge for researchers.

The manner in which children conceive of technology and the web also influences the context in which they seek information. In an experiment conducted with French children (Dinet and Kitajima, 2011) that aimed to understand the relationships between children's information search performances and their mental model of the Web, results showed that several mental models of the Web existed for young users, independently of their experience with the Web. Moreover, the results confirmed that mental models of the Web could have an effect on their performance of tasks that relied on its use (Dinet and Kitajima, 2011). Another important aspect of technological context is availability and, in a classroom environment, the attitude and experiences of teachers or others in an instructional or pedagogical role. It is not reasonable to assume, even in 2019 that all classrooms will have equal or reliable access to technological and other resources, nor that all teachers or indeed schools will have uniform approaches, experiences, training in or attitudes to its use. Even in 2019 it is common to find school classrooms in developed countries that are not reliably Internet-enabled, if at all, and staff who are unconfident or conservative about using technological resources in their teaching. Thorpe, in research conducted in New Zealand in 2015, found that almost half of pre-school classrooms were not Internet-enabled and, while teachers were comfortable with digital technology for everyday uses, they were less comfortable about using it in the classroom. In the same study, evidence was uncovered that a teacher's pedagogical beliefs tended to predict their use of web searching in Internet-enabled classrooms (Thorpe et al., 2015).

Motivation

Motivation has often been cited as an important factor when considering how humans seek information. Children appear to differ from adults both in their levels of motivation and in the topics and situations that motivate them. Nielsen

et al allude to this in their discussion of the findings in their reports of 2001 and 2010 on children's use of the web. Nielsen et al found that adults were chiefly interested in looking for information such as that from dedicated news and shopping sites and were using the web as a means of communication (Nielsen Norman Group, 2010). The children in the Nielsen samples were, by contrast, mainly using the web for entertainment purposes and were looking for content related to their favourite characters and idols. Where use of computers is concerned, social and leisure use continues to outweigh educational use and this is indeed how children have long been known to perceive computers (Large, 2005a). There has been a shift in recent years towards an increasing use of the web as a communication means by children, particularly via social networking sites but many of the differences in motivation between adults and children appear to have remained. In a study conducted by Druin et al (Druin et al., 2010a) it was found that in an experimental setting, many children were uninterested in searching for information online or were only interested in searching for information relevant to their personal interests. Consequently, those children who reported being unmotivated in this study were the least successful in completing information seeking tasks. There have been interesting responses to this lack of motivation such as gamification approaches to information seeking via games such as PageFetch, which aimed to engage children completing search tasks through a fun and interactive search-like interface to increase their motivation to search (Azzopardi et al., 2012). By increasing the engagement of children in this type of information seeking activity and using other highly interactive means it is hoped that better insights into child information seeking behaviour may emerge and that children will enjoy more success and satisfaction in their information seeking.

Gender

In Section 2 of this chapter we learned that there are known differences between boys and girls with regard to their cognitive ability and development, with, in general terms, girls having a tendency to have better verbal skills than

boys. Girls are also known to be more socially developed than boys of the equivalent age at certain stages and there is evidence that boys tend to have better mathematical skills at certain stages in their development. Given these known differences, it is worth looking at the literature to see what is known about the impact that these differences may have on the information seeking abilities and preferences of boys and girls and indeed on how we study or should study these. In this section I consider not only the preferences and abilities of boys and girls in their information seeking but also outline what is known about their attitudes to technology and other information and communications media.

Much of the research conducted regarding difference between the online behaviour of girls and boys has focused on their use of video games but there have been several studies that are concerned with the influence that gender has on their information seeking behaviour and use of the web more generally. The Nielsen Norman Group noted the heightened importance of gender and age when thinking about children's interactions with websites (Nielsen Norman Group, 2010). In studies involving children from nursery age to adolescence, when use of online information was investigated, a greater difference in behaviour and preferred content types and styles of interaction was observed between children of different genders than is generally observed with adult users of online information. Many of the early studies of children and information technology found differences in attitudes to technology between the genders that were even more pronounced than tends to be the case when such studies are conducted now. This decrease in difference could possibly be due to the increasing prevalence of these technologies in everyday situations in the home and elsewhere, a proliferation of mobile and other technological devices, and, increasingly, a democratization of content now that it is less controlled by a small number of creators than was the case at its inception, but it is difficult to be certain about this and to generalise. In the early days of the web however, it was consistently found that males were more interested and engaged by technology than were females e.g. by Schacter et al who also found

differences in children's searching behaviour between the genders (Schacter et al., 1998). Other studies around that time showed differences in confidence levels between children of different genders regarding their use of software e.g. Nahl and Harada (Nahl and Harada, 1996). These types of findings often raised questions as to whether the dominance of male software and web designers had resulted in technology, interfaces and content that were particularly male-oriented resulting in this relative lack of interest from girls. However, it was shown in at least one study of that time that when software was designed specifically with female children in mind, girls were no more satisfied than they were with software designed with boys in mind (Joiner, 1998).

The respective differences in the attitudes of boys and girls to technology appeared to be changing by the beginning of the new century (North and Noyes, 2002) with differences between the genders tending to be found to a lesser degree than in the studies that were conducted in the 1990s and earlier, for example. One of the largest studies of the new century, involving several hundred child users of public libraries, found that girls were equally positive about computers and their ability to use them (Kuiper et al., 2005). However this study focused on children in adolescence and, as we have seen in the discussion in Section 2, it is likely that gender differences would be more pronounced at certain ages and stages of development than at others, therefore more careful examination of how these developmental differences manifest themselves by gender is required. Other studies have pointed to differences between the genders, for example, a common finding in this era was that girls tended to use the web for shorter periods than boys (Large, 2005a) but there was little investigation or analysis as to why these differences occurred. Equally, some studies found no differences between the genders in terms of their interaction styles and preferences. Why this inconsistency should occur was poorly understood but it was posited that the answer might lie in the task design employed in these studies (Large, 2005a). There was also a suggestion that the social class of the users studied might impact on whether these gender differences were pronounced enough to be observed by researchers (Large,

2005a). In any case, there is no firm agreement as to whether gender necessarily has an effect and Agosto has argued that using gender as a sole determining factor is too simplistic a way of looking at information seeking behaviour therefore some caution should be exercised when making evaluations along gender lines (Agosto, 2004).

Information Need

This chapter began with a discussion of the centrality of the concept of information need to the study of information behaviour and its origin in the desire to locate and obtain information to satisfy a conscious or unconscious need. We saw also that information needs may be differentiated into different types depending on the situation, and the knowledge domain of the user (Marchionini, 1989) and that information needs may be self-generated or imposed by others (Gross, 1995).

Much as is the case with adults, it is important that children are able to identify and meet their own information needs. In identifying these needs, children also require to be able to know how to go about locating sources to meet them, to be able to identify which sources are appropriate, to have the skills to collate these sources, and to be able to organise these sources. This is what it takes in order to be a successful information problem solver (Kuhlthau, 1988)(Brand-Gruwel et al., 2005). Early research showed that not only did children differ in their approach to information seeking; children have information needs that are rather different to those of adults (Walter, 1994). It is also known that the information needs of children tend to depend very much on the stage of development where they are currently. The stage has an effect on how the need is conceptualised.

Children's information needs often arise in an educational context where that need is not self-generated. The need instead is imposed by a teacher or teaching assistant, for example, and is related to the requirements of a school project,

homework exercise or other type of imposed query (Gross, 1995). This difference appears to account for some variability in the success of a child's information seeking. One study that attempted to make the comparison between searches for self-generated and imposed information needs found that children tended to be better at performing self-generated tasks. The researchers believed that this difference was due to reasons related to domain knowledge or familiarity with the topic (Bilal, 2002a). Children were better at constructing queries to find information that satisfied their self-generated information needs and also to evaluate it, whereas for imposed tasks they were much less able to properly assess relevance nor to assess whether they had found enough information to satisfy the needs of the task.

Queries

We saw in Section 1 the central role that querying has in information seeking and the difficulties that adults face when trying to transform their information need into a suitable query, as well as the further difficulties encountered in reformulating that query as i) the original query fails and ii) the understanding of the topic at hand changes as results are revealed (or not). Formulating queries is heavy on cognitive load and relies on significant domain knowledge and language skills, to say nothing of the mechanical skills required to enter text to send the query to a search engine in situations where technology is in use. We saw in Section 2 how different children tend to be from adults developmentally, and it is therefore likely that children would experience even more profound difficulties than do adults when formulating queries. In this section, therefore, I will look at those studies that have investigated children's queries, and the impact that elements such as limitations of spelling, typing and children's preferences have on this querying.

Query Formulation and Reformulation

Early work such as that by Hirsh described the difficulties that children experience with query formulation and reformulation (Hirsh, 1997). These

difficulties were also revealed in work by Solomon in a classroom-based study of use of OPACs (Solomon, 1993). Solomon's work, carried out with 679 elementary school children from first to sixth grade (6-12 years approximately), observed their interactions with online catalogues that were designed for adult use. Solomon noted these query formulation and reformulation issues but did not report them in a particularly differentiated way with regard to age. Others have also acknowledged that query reformulation is very difficult for children and have attributed this to their lack of knowledge of synonyms that would facilitate rewording or reframing of the query (Bilal and Kirby, 2002) (de Vries et al., 2008) (Large, 2005a). In their study of very young children, who, we have seen in the studies from the early part of the century, were thought to be keener to browse than search, Spink et al found that query-based search was key when the youngest children are using web search engines to search the web (Spink et al., 2010). This emphasis on querying rather than browsing was also found in a study of children in New Zealand in more recent times (Vanderschantz et al., 2014). Spink's study of 2010 found evidence that children aged 4-5 years engaged in both browsing and creating web queries. The queries were often expressed in the form of questions. These young children were also shown to be able to be able to reformulate these queries (Spink et al., 2010) in contrast to the findings of earlier studies that showed that even older children were struggling with such tasks. While children have a tendency to non-specificity in their queries as compared to adults, other studies have also shown that children also have a tendency, more so than adults, to enter overly specific queries that result in no results at all (Kammerer and Bohnacker, 2012), which has a major impact on searching success and satisfaction. Many of the problems that children experience with query formulation and reformulation stem from a lack of skill in spelling and a decreased vocabulary compared to that of adults and we shall discuss these issues in the subsections that follow.

Spelling

Spelling issues appear to manifest themselves in many different searching contexts and different study settings, and at all ages of childhood. Solomon's study of first to sixth graders (6-12 years) using OPACs found that the ability to spell well was either lacking entirely or very weak in the study participants, and these difficulties were particularly pronounced in the younger children in the study (Solomon, 1993). In addition, other studies have identified the difficulties that children have with searching due to their inability to generate queries accurately (Jochmann-Mannak et al., 2010). In a study conducted with 32 participants aged 8-12 years, they found that children took a long time to spell correctly the terms that they wanted to use in their searches. The difficulties with spelling and therefore query formulation and reformulation have been shown, perhaps unsurprisingly, to be more pronounced in younger children than in those who are older (Kalsbeek et al., 2010). Correct spelling of search queries was found to be particularly difficult for children in a lab-based study (Vanderschantz et al., 2014) and also in a study of home-based searching (Druin et al., 2010a). Druin noted that despite their status as so-called "digital natives", (a term that is now often argued against or dismissed as being overly general, misleading and inaccurate), children continue to struggle with spelling and typing. These difficulties have the effect of causing children to have their attention on the keyboard as they type and not to be looking at the computer screen while composing their searches. This has the additional effect of meaning that those tools that are designed to make searching easier, such as autocomplete and spelling suggestions that are available in many search engines and search systems, often go unnoticed by children in their current forms (Druin et al., 2010a). One study that did investigate the use that children make of such support showed however that they did sometimes use it: in a lab-based study of children using Google it was found that children used tools such as the spelling correction tool and query suggestion tools (Jochmann-Mannak et al., 2010).

Typing

We have seen already the difficulties that arise from uncertainty and lack of experience with spelling. In addition to this, and in many ways compounding the problem, other studies have also identified the difficulties that children have with searching due to their inability to type accurately e.g. (Solomon, 1993) (Jochmann-Mannak et al., 2010). In a study conducted with 32 participants aged 8-12 years, Jochmann-Mannak et al found that an ability to type accurately was a huge barrier to constructing successful queries, with children taking a large amount of time to type correctly the terms that they wanted to use in their searches. Children are further challenged because of the difficulties that many experience due to not being able to touch type. This need to always look away from the screen while constructing queries and being able only to look at the screen infrequently, leads to more frequent errors and omissions in queries than one would expect with adult searchers (Borgman et al., 1995). Druin has also noted the problems that children have with typing, even in children who have been using computers since early childhood (Druin et al., 2010a). Voice interfaces are beginning to make their presence felt of course e.g. (Yarosh et al., 2018), but for the moment, text-based queries are still the dominant medium for interacting with search systems and engines.

Natural Language

Knowing the issues that children tend to have with query formulation and the influence that spelling and typing difficulties can have on this, it is worth considering the characteristics of queries that emerge from children when they seek information. In general terms, most of the studies undertaken in this area have found that children rely heavily on natural language queries rather than on keywords and this has been found fairly consistently from the days pre-web when children were beginning to use OPACs, right through the early days of web searching, to their current use of web and other online resources. As far back as 1989, Marchionini, working with children in their 3rd, 4th and 6th grades of elementary school (ages 9, 10 and 12 years approximately), looked at

how novice child users performed with digital library catalogues. This study revealed a reliance on using natural language for their querying (Marchionini, 1989). In addition, (Borgman et al., 1995) found that children mostly employed natural language queries when interacting with library search systems. Queries were often entered in the form of sentences or even in the form of questions, something that was also found by (Spink et al., 2010) who also observed children to use the question form of querying as they searched for information online. The children in Borgman's study who were interacting with online catalogues (and probably had no experience of the web as yet in 1995) were unaware that they were expected to search using a specific vocabulary to match up with the search terms of the system they were using. In the same early period, and looking at web searching, the studies of (Kafai and Bates, 1997) also showed that children relied on natural language queries for their searches. More recently, Kammerer and Bohnacker looked at how children use search engines to look for information. In a lab study with children aged 8-10 years they investigated whether the use of natural language queries would lead to more successful search outcomes than would keyword queries using Google. Their findings indicated that natural language queries were favoured by children in this age group, in this setting (Kammerer and Bohnacker, 2012). In addition, researchers such as Vanderschantz et al, in their work with children in New Zealand, have noted that while Google lends itself to the natural language queries of children it does not offer explicit assistance when that natural language approach fails (Vanderschantz et al., 2014).

Keywords

We have seen already how children tend to prefer to use natural language when performing queries, and that they often use full sentences and even questions to do this. This contrasts with the keyword queries of adults, which are typically at the level of two or three words per query (Spink and Jansen, 2004). How do children fare when forced to use keywords and why should this preference for natural language arise? It is worth considering that children will generally have

less experience of the world as than adults, will have undertaken less education, done less reading and will have fewer cultural references to draw on.

Accordingly, they may have very limited domain knowledge in many search situations and this has an impact on how they perform those searches. This lack of domain knowledge means a lack of associated vocabulary to draw on which often leads to poor keyword searching (Hutchinson et al., 2006). When trying to generate keywords to use for querying, children experience difficulties and often rely on the words that are used to introduce assignments (Vanderschantz et al., 2014). These words could be drawn from the physical task sheet where the assignment is presented or from the verbal descriptions given by a teacher, for example. This finding indicates strongly the need for clear task instructions for information tasks.

Booleans

While it is less common now that searchers have to rely on Boolean searches to perform efficient searches, past research revealed the difficulties that children experienced in doing so. This research revealed a good deal about children's abilities with logic as compared with adults and may hint at some of the other difficulties that underlie children's issues with searching and seeking information. The difficulties that children have in using Boolean queries were observed in studies by (Borgman et al., 1995) who found that children struggled with Boolean logic, a characteristic that has also been shown by (Nahl and Harada, 1996) and by (Schacter et al., 1998) in studies of children's use of digital libraries. Where web searching and Booleans is concerned, Kafai and Bates conducted studies that pointed to the difficulties that the youngest school age children encounter when trying to employ Boolean logic in particular (Kafai and Bates, 1997) and (Bilal and Kirby, 2002) observed, in a study of children's use of web searching, that children barely employed the use of Booleans when constructing queries.

Vocabulary

Children tend to have a much less developed vocabulary than adults and have fewer words to draw on when performing queries, which adds to the difficulties they have with query formulation and reformulation. This lack of vocabulary is also one of the reasons for children's tendency to employ natural language queries rather than using keywords (Marchionini, 1989). As one might expect, lack of vocabulary is more pronounced in younger children than it is in older children. This lack of vocabulary impacts on natural language querying also. Studies have revealed that these natural language queries by children often suffer from vagueness or non-specificity of language due to vocabulary limitations, with a resulting impact on the quality of the research results that ensue (Bilal and Kirby, 2002). In addition to the difficulties that limited vocabulary has on query formulation, query reformulation is also very difficult for children due to their lack of knowledge of synonyms (Bilal and Kirby, 2002) (de Vries et al., 2008) (Large, 2005a), and there are inevitable impacts on children's interactions with search results due to associated issues.

Browsing

The two main modes of interaction with online information have traditionally been, and remain, searching and browsing. We have seen so far a great deal of evidence about the characteristics of children's search behaviour using either natural language or keyword input, particularly in regard to search engine interfaces, but it is useful also to consider how children browse to find information. Early work in this area found that children preferred to browse rather than search when using library catalogues (Borgman et al., 1995). Work by the same researchers also revealed that the browsing performance of children was significantly better than their search performance when using the same systems (Borgman et al., 1995). In the early days of the web there were suggestions that young children in particular were reliant on browsing to interact with onscreen information. This was borne out by a study by Kafai et al which found that the youngest children are really only able to browse through

information on a screen rather than enter search terms, given the vast difficulties that they encounter with query formulation (Kafai and Bates, 1997). This phenomenon did not seem to be only about age however as it was shown in another study that older children were keener on web browsing than they were on creating web queries (Large, 2005a).

Aside from abilities and preferences regarding browsing versus searching skills one should also be aware of the characteristics of that browsing. In one of a series of studies of children and adults using the Yahoooligans! search engine (Bilal, 2002b) researchers found that children demonstrated a non-linear browsing style that often deviated from the task at hand. By comparing the browsing style of adults and children, Bilal et al showed that children's browsing behaviour involved a good deal more backtracking than was observed in adults performing the same tasks. In addition, the 'web moves' that children made, which were an indicator of their effectiveness and efficiency in performing the task, were observed to be of much lower quality than those of the adults. All of this indicates that browsing through online information is a more time consuming and challenging experience for children than is generally the case for adults.

It does seem however that in recent years there has been a move away from a reliance or preference for browsing behaviour when children search online. This may be due to the new technologies that are now used to access the web, better support for natural language querying perhaps, or due to a greater cultural awareness around searching due to the familiar notion of being able to use Google to seemingly satisfy any given information need. Indeed, despite the difficulties and challenges that children face with searching, even with the most popular and advanced search systems, children do seem keener these days to search rather than browse than was shown in earlier studies. An interface such as the plain searching interface presented by Google was regarded positively by children with regard to its ease of use (Druin et al., 2009) and in more recent studies comparing browsing and searching it has been found that few children

were browsing when searching was also available as an interaction option (Vanderschantz et al., 2014). Also, in an experiment with 158 children, aged 10-12 years, in which search performance and attitudes towards an informational website were investigated, children's search performance was found to be much more effective and efficient when children were using the search engine element of the website than when they were browsing the menu (Jochmann-Mannak et al., 2016).

Reading Ability

One of the key differences between adults and children that is common at all ages of childhood and is particularly pronounced in younger children is that of reading ability. We saw in Section 2 that at certain stages of development children are not yet ready to tackle much more than very short texts and, even at 11 and 12 years of age, many children have difficulties with extended texts. This is particularly the case with boys, whose development may be lagging that of girls at this point. Irrespective of developmental differences, children have been found to have an aversion to reading long texts on the web, a feature that is also common to adults (Nielsen Norman Group, 2010). Interestingly, however, the same studies showed that children were keener than adults to read instructions online, preferring to read them in full, which is rarely and infamously not the case with adults. The insistence on reading such instructions may impact on search tasks by lengthening the time taken to carry them out. The medium in which reading takes place also has an impact on how successful that reading is. Children taking part in a lab-based study of their information seeking behaviour indicated a preference for reading on paper rather than on screen (Vanderschantz et al., 2014) bearing out the earlier findings of (Hinze et al., 2012).

The limited reading abilities of children have had an additional and arguably unfortunate effect: they have impacted the design and scope of the studies that have been used to investigate their information seeking behaviour. Indeed, the

majority of studies of child information-seeking behaviour have been conducted with children aged 10-13 years for this reason. (We saw earlier that the difficulties that children aged less than 11 years have with abstract thought, means that the number of studies conducted with children in that age group has been limited). This bias may of course be due to a number of other factors beyond the literacy issues: generally children in this age group are less involved in sitting formal exams and thus are more available to take part than older children working towards certificated qualifications, but key is that by the age of 10 children are at a reading level that makes conducting user studies with them far more straightforward than it often is with younger children. The methodological tools that may be employed and the variety of tasks that may be investigated are far more diverse than is generally the case with younger children.

Relevance and Relevance Judgments

In this section I examine what is known about how children make relevance judgments and how their conceptions of relevance might differ from those of adults. I consider also how these differences impact on the success of children's information seeking in a variety of circumstances, and describe the attempts that have been made to support children in making these judgments. Making relevance judgments poses a particular challenge for children due, in many cases, to a lack of domain knowledge, particularly where information needs and queries are imposed rather than self-generated. Children differ from adults in their knowledge and familiarity with literature; their knowledge and understanding of many topics is, not surprisingly, generally much more limited than that of adults due to lack of experience, education and socialisation. The range of topics for which this is the case is likely to be far larger for children than it is for adults so there is a relative lack of depth and breadth in children's domain knowledge. This lack of domain and literature knowledge has an impact on the relevance judgments that children make. Where adults can turn to their previous experience and knowledge of a topic and further to the reputation of

certain sources and authors to judge the reliability of information, authority and ultimately relevance of material, children often have to rely on concrete subject terms to assist them with evaluating information. Such subject terms might originate in the text of the assignment that they have been given or in a verbal instruction associated with the task (Marchionini and Teague, 1987) (Solomon, 1993). Of the studies of relevance criteria employed by children when searching for information, one of the most notable and detailed was that carried out by Hirsh (Hirsh, 1999). She pointed to the lack of knowledge that existed regarding children's information preferences and the mechanisms that were involved when children evaluated information found in electronic searches. In many ways, this lack of understanding of the behaviour continues even today as the web continues to evolve. Hirsh identified several factors that influenced the relevance judgments made by the participants in her study. These were: *topicality*-how well the information matched the subject area within which the search was conducted, *novelty*-how recent the information was or was perceived to be, *authority*-whether the source seemed to be a knowledgeable one, *interest*-how personally interesting they found the information retrieved and *peer interest*-how interesting, useful or cool the information would seem to friends or classmates. Hirsh found that each of these factors came into play in different ways depending on what type of information that was being searched for, and also that each criterion accordingly took on a different importance in each situation. For example, where graphical information was concerned, *interest* (how personally interesting they found the image or other graphical items to be), was found to be the most important criterion, however for most other types of information *topicality* was the most important criterion. Hirsh's study found that the participants did not use what we might consider to be the usual criteria for assessing relevance e.g. authority, accuracy, truthfulness, rather, she found that the children were trusting of the information found and did not question the source of the information, showing a rather different understanding of authority to how adults might conceive of it. This finding regarding the trustworthiness of information is borne out by work carried out by Fidel et al (Fidel et al., 1999) who found that children, even in the more

advanced stages of educational development, did not question the authority of information that they found on the Internet, and by a study by Wallace and Kupperman that showed that most students when evaluating web-based information took it at face value and did not question its trustworthiness or authority (Wallace and Kupperman, 1997). Other studies have shown that younger children of primary school age favour those sites that contain pictures and colourful graphics (Kafai and Bates, 1997) and may even use these features as a means of determining the relevance of a website or page (Fidel et al., 1999). When Jochmann-Mannak et al conducted research with children aged 10-12 years, investigating three designs for the same website that varied in playfulness of navigation structure and playfulness of visual design, they found that the design did not have an effect on children's search performance, but that it did influence children's feelings of emotional valence and their evaluation of "goodness." In fact, they found that children felt most positive about the version of the website that had a classical navigation structure and playful aesthetics (Jochmann-Mannak et al., 2016) a finding that is likely to be in contrast to that which would result in an equivalent study of adult information seekers.

Aside from these relevance judgments on information objects, we should consider also the earlier stages of the relevance judgment process. Rather than concentrating on how judgments are made on individual documents it is important to know how children judge relevance when confronted with a results page. Children have been shown in multiple studies to scroll only rarely so it is likely that many research results are not looked at. Additionally, in common with adults, children rarely look beyond the first page of a list of search results, if indeed they realise that there are subsequent pages to be considered at all. Druin et al found that once a search had been executed, results went largely ignored except for the first few items on the first page of the results list (Druin et al., 2010a). In addition, Jochmann-Mannack et al showed that the only problems that children experienced with using Google, concerned the judging of the relevance of search results for search tasks (Jochmann-Mannak et al., 2008). A study by Vanderschantz et al showed that children's relevance judgements

centred around their reliance on scanning result lists to find Wikipedia articles that might satisfy their information need (Vanderschantz et al., 2014).

It is clear from the studies that exist regarding children and relevance that not only do children experience difficulties in making relevance judgments due to their lack of domain knowledge and also due to a general trusting nature regarding many information sources, they also make these relevance judgments in different ways in different situations. These judgments are often dependent on the medium looked for and on the physical presentation of the item retrieved, in a way that differentiates their behaviour from that of adults. The issues that children experience when making relevance judgments often result in failure and frustration (Druin et al., 2010a) and must therefore be given very careful consideration.

Success in Information Seeking

When studying children's information seeking behaviour, notions of success and satisfaction are very complex, and, as a minimum, consideration must be made of the type of information need (imposed or self-generated) and the context in which the search is being carried out e.g. for leisure or for homework. Is the success related to something that "will do" for the task at hand or is success more about the item or items that bring the most joy, fun, pleasure to the individual or kudos among the peer group? And is the success just about the eventual items found or about the process itself i.e. the satisfaction in interacting with information or with a system to achieve a personal goal? We might also ask how this sense of success is affected by the other people present when the search takes place. Who assists, and who has the information shared with them in some way, either formally or informally?

A very common theme related to success in searching that has been consistently evidenced since the earliest days of the web is that, despite the existence of sites and search facilities specifically designed for use by children (often with specific

input from other children in participatory design or other design research programmes), children often report preferring to use those systems that are designed for adults. Not only do children often prefer to use these systems, but in fact they often find them easier and more satisfying to use even than those sites that have been designed, both from a content and interaction point of view, to be suited to their specific age group i.e. not just generic children's sites. For example, when (Nielsen Norman Group, 2010) presented children with a large variety of websites with which to interact, from a usability point of view, children had the greatest success in interacting with those sites that been developed for and were also considered highly usable by adults, rather than those sites that had been designed specifically with their age group in mind (Nielsen Norman Group, 2010).

The consequences of search being unsuccessful can be very frustrating for children as (Druin et al., 2010a) and others have shown. Some research in this area has revealed very specific behaviours that occur in those situations where searching fails which explain the lack of success. This is particularly so when the existing models of information seeking behaviour are considered. Shenton and Dixon reported that there were three behaviours that might account for unsuccessful information seeking by children. These were: *redirections*, which are characterised by searchers wandering off to new search paths, *recursions* where children circled back in the process, sometimes on repeated occasions, and *short circuits* when searchers skipped one of the information seeking stages such as Kuhlthaus's *topic selection* (Kuhlthau, 1991). Missing out this step in the process can lead to difficulties with the *focus formation* aspect of the model (Shenton and Dixon, 2003b). This, as we can see from Kuhlthau's descriptions, impacts greatly on a student's confidence and optimism about being able to complete a task (Kuhlthau, 1991). I have already argued here that defining what success means in the context of information seeking for children is of utmost importance. As far back as 2004 Bilal concluded that more research was needed in order to achieve this. She ascribed the lack of true understanding of what success in information seeking means for children to the fact that so often levels

of success for children's information tasks have been defined by adults, with little regard for what a child might regard as a success (Bilal, 2004). My recent readings of literature in the area reveal that this notion of success when applied to children still appears to be poorly defined and demands further investigation.

Tasks

We saw in Section 1 the impact that task type, task design and task complexity can have on the information seeking process, in terms of the difficulty in formulating queries, the number of sources consulted, the information channels chosen, the manner in which relevance judgements are made, and on the resulting success of the task outcome. It is therefore worth considering what is known about such factors when it comes to the information seeking of children.

Studies have examined the contrasts in children's information seeking behaviour between various types of task. Bilal, for example, observed children completing three different types of task: *fact-finding*, *research-oriented* and *self-generated*. She observed that 50% of the children studied were successful in completing the *fact-finding* task, 69% succeeded on the *research-oriented* task and 73% succeeded on the *self-generated* task. However, of the 69% who succeeded on the *research-oriented* task, success was only partial, with children faring better on the other two types of task (Bilal, 2002a). Bilal has also pointed to the need to examine in more detail the effect that the structure of tasks has on children's success in completing them and also to the need to examine the effect that a child's existing domain or other knowledge has on his/her success in completing these tasks.

The literature on child development would suggest that children would find it particularly challenging, especially in their earlier years to perform multiple tasks at a time due to their limited working memory as compared to that adults. It has been shown however by a few researchers that older children can indeed multi-task while engaged in web searching (Facer, 2003) and in addition, (Spink

et al., 2010) showed that much younger searchers of pre-school age successfully multi-tasked while performing web-based searches. This is in contrast with Kuhlthau's findings that children aged under 11 are generally not successful in multi-source searching due to their weaknesses in abstract thought (Kuhlthau, 1988).

Some authors have suggested that the manner in which information-seeking tasks for children are devised may not assist them effectively in the development of their information literacy. In reflection of this poor design, De Vries et al have argued that web searching must be embedded in the design of a learning task so that learners will develop personally relevant questions in relation to the task (de Vries et al., 2008). De Vries et al argue further that embedding web searching in the task design in this way will result in children learning to search reflectively in a way that might not otherwise be possible. This reflective searching often fails to arise in many learning tasks, due to poor structuring or explanation of the task. The types of task that children are given to perform i.e. those that are imposed (Gross, 1995) are often designed in a way that does not support better information literacy for the children carrying out those tasks even when these tasks are part of the curriculum that deals explicitly with information literacy and use. Early work in the web era found that project exercises in the early years of school, used with the intention of developing children's understanding of information and how it is used, do not generally meet children's needs (Moore, 1995). Even now, exposure to technology from an early age does not seem to assist particularly with these difficulties, with (Druin et al., 2010a) finding that such exposure alone could not circumvent the developmental difficulties with spelling, typing, query formulation and analysis of search results that leads to the searching and finding of information being a difficult, or in some cases, even impossible task for many children.

Several authors have drawn attention to the need for children to receive training in order for them to become effective at searching. (Bilal, 2002b) called

for children to be exposed to effective web training, in particular the development by information professionals of web training programmes that incorporate use of the models of the information seeking process. There is a strong case for training in information skills and literacy due to the lack of experience that children have, and also due to their lack of practice in information seeking (Bilal and Kirby, 2002)(Bilal, 2002b). Todd, who conducted an extensive meta-analysis of adolescent information seeking behaviour and use of information for educational purposes noted that “a consistent theme emerging from all these studies is the need to develop learners’ information and critical literacies” (Todd, 2003).

Rather than relying on observations of children’s information seeking alone in order to understand how tasks are performed, there is a growing body of research that has investigated children’s searching via extensive logging of their web searching activities. These studies have revealed that children tend to enter queries that are far shorter than those that characterise typical adult search engine queries (Duarte Torres et al., 2010a)(Duarte Torres and Weber, 2011), which contrasts with the findings of Spink et al who found that when performing keyword searches, children tended to use natural language queries that were longer than the short, two or three word keyword queries of adults (Spink et al., 2010). Logging studies have also been key to revealing the time that children tend to spend on particular tasks. The work of (Duarte Torres and Weber, 2011) showed that the searching sessions of children tend to be of much shorter duration than those of adults. This may be down to several factors: giving up more quickly due to early failure and difficulty in query reformulation and a reluctance to engage much with information found beyond the first few result list items (as seen earlier in this chapter). These shorter sessions would appear also to be linked to the findings from the works of e.g. (Cowan et al., 2006) and (Druin et al., 2009) who observed children to have a shorter attention span than adults when confronted with similar searching tasks.

Web Usability

Given that the greater part of children's information seeking these days occurs via the web, it is worth considering whether the difficulties that children encounter that are related to the usability or otherwise of the sites that they visit on their search journey. One of the first major studies in this area was conducted by the Nielsen Norman Group in 2001, and was then repeated in 2010. At the time, the 2001 study was the largest of its kind ever conducted. The researchers observed children in the USA and Israel interacting with 24 websites designed specifically for children, as well as 3 websites designed for use mainly by adult users: Amazon, Yahoo! And Weather.com. The researchers sought to discover how children differed from adults in terms of their likes and dislikes and in their ease/difficulty in interacting with the sites. Their other chief aim was to explore (and explode) some of the myths on which much design for children had been based. The myths referred to, some of which persist to this day, concerned the need for content to be simplified and less sophisticated, the need for visual design and multimedia to be added wherever possible, as well as the myth that children were as or perhaps even more web 'savvy' than adults, which gave them a good understanding of technical terminology. The study's findings contradicted many of these myths (Nielsen Norman Group, 2010).

Nielsen's group found that the children had the greatest success in interacting with those websites that been developed for, and which were considered highly usable by adults, rather than the sites that had been designed specifically with their age group in mind. In common with previous findings on adult preferences, children welcomed standardised interfaces that were easy to learn. Children were also found to have an aversion to reading long texts on the Web, a characteristic that is also common to adults (Nielsen Norman Group, 2010). There were several aspects of interaction in which the children differed greatly from their adult counterparts. Children were observed to scroll only rarely. They appeared to prefer to read instructions in full in contrast to the typical adult approach to instructions on websites. Additionally, the researchers noted

the heightened importance of gender and age when thinking about children's interactions with websites. Differences due to these two factors are far more pronounced in children than they are in adults and both of them with age in particular requiring particular consideration when designing for children (Nielsen Norman Group, 2010).

The myths that were exploded included that children would require interfaces that were elaborate and contained features that flashed or were "jazzier" than would be the case on the equivalent sites intended for use by adults. In fact, children found those features difficult to interact with and found the sites designed for adults easier to use, and, indeed, children in the study preferred to use these adult-oriented sites. Similar results have been found regarding children's use of search engines designed for use by children versus their use of search engines designed for adult use, as we will see in the next section.

Search Engines for Children

Since the earliest days of the web, there have been efforts to design search engines that are specifically intended for use by children. There is an accompanying body of research that explores how children interact with these systems, in particular the work of Bilal et al on the Yahoo!igans search engine (Bilal, 2002b) and Large et al's (Large et al., 2002) work developing web portals specifically designed with and for children. Druin et al's work developing and researching the International Children's Digital Library ("ICDL - International Children's Digital Library," n.d.) led to interesting insights being generated as to children's search preferences and abilities when searching (Druin, 1999a) (Druin et al., 2003) (Druin et al., 2007). In more recent years, search systems such as PuppyIR (Azzopardi et al., 2009) were developed to support searching by children and, Gossen et al (Gossen et al., 2014) developed search interfaces specifically for use by children, but even these do not always match the skills, abilities and preferences of all children for all types of searches. Those search interfaces that have been developed for children have often been targeted at

very young children, often with a focus on their browsing abilities (Bilal and Kirby, 2002) (Bilal, 2002a) (Large, 2005a) and this is reflected in the research results that have emerged from the studies conducted with these search engines, with much of the discussion focused on querying versus browsing and the success and effectiveness (or otherwise) of these two modalities. There are other search engines for children that are commercially available such as, Kiddle (“Kiddle - visual search engine for kids,” n.d.) and others that emphasise their online safety credentials such as KidzSearch (“KidzSearch | Safe Search Engine for Kids,” n.d.) and KidRex (“KidRex - Kid Safe Search Engine - Now powered by Alarms.org,” n.d.), but there is only limited data available regarding how widely used these are or on how well they perform or are preferred by children as compared with children’s use of other search engines such as Google and Bing, for example.

One study that did attempt to make comparisons between the performance of search engines designed for kids and those designed for adults concluded that involving children in judging the relevancy of information retrieval by the search engines for their queries was key to understanding how well these search engines were performing (Bilal and Ellis, 2011). In addition, in a study that built upon that work, Bilal and Ellis argued for future work in this area as questions remained regarding how to measure the performance of such engines with regard to relevance assessments and how well these match the school and reading age of the children using them (Bilal and Boehm, 2017). In the more recent study, Bilal and Boehm argued that, “Today’s children hardly use search engines designed for their age levels; and rely on Google as their gateway for finding information” (Bilal and Boehm, 2017).

One common theme that emerges, particularly from more recent research on search engines designed for children, is that these search engines do not generally provide anything in terms of support for effective searching beyond that which is already available from existing adult search engines. This finding was reported by Druin et al in a study of children’s leisure searching (Druin et

al., 2010a) and by Gossen et al who found that most search engines for children did not offer observable advantages over the most commonly and frequently used search engine, Google (Gossen et al., 2014). Indeed, when Jochmann and Mannak (Jochmann-Mannak et al., 2010) compared how children searched on four different interfaces designed specifically for children, they found that children did not perform any better when using those interfaces than they did when using an adult search engine such as Google with no adaptations.

Models of Child Information-seeking Behaviour

Most of the frameworks that have been developed to describe children's information seeking have not made specific consideration of technology, even though it is known that technology plays an increasingly prominent role in that process. The models that exist tend to deal with the stages or phases of the information seeking process with the expectation that learning to use such models will result in children finding the information that they need (Shenton and Dixon, 2003b). Earlier models that attempted to describe child or adolescent information-seeking behaviour include the previously mentioned Information Skills (Tabberer, 1987), The Big Six (Eisenberg and Berkowitz, 1990) and Burdick's Information Search Styles (Burdick, 1996). Burdick's Information Styles classifies the searcher's ability to focus and the amount of involvement or motivation. Burdick's own research suggests that it is the focus more than the motivation that makes a person successful in their information seeking. This model does not allow for developmental differences and therefore may not be applicable to younger children.

Druin et al have made attempts to classify how children search in different situations by proposing different roles that they assume in those situations, perhaps even within the same search session (Druin et al., 2010b). (Eickhoff et al., 2012) took this idea of searching roles further and showed that often children are acting in accordance with more than one role at a time depending on the situation. Eickhoff et al went further in a task-based analysis of child

searching roles by defining three types of role: *task independent*, *task dependent direct*, and *task dependent inferred features* (Eickhoff et al., 2012), where Druin et al, in study of search at home identified the following roles: *Developing Searchers*, *Domain-specific Searchers*, *Power Searchers*, *Non-motivated Searchers*, *Distracted Searchers*, *Rule-bound Searchers*, and *Visual Searchers* and used these to inform guidelines for designers of search systems. The concept of roles that children play (or can play) both in online interactions and in designing for these is particularly prevalent in the Child Interaction Design community at the moment and has inspired several workshops and a special journal issue on this theme. We can expect further work in this area in the coming years.

Evaluation of Child Information Seeking

Despite the existence of an extensive and varied history of research on information retrieval and information seeking with adult searchers there is nonetheless a relative lack of evaluation of children's information behaviour in the literature (Eickhoff et al., 2012). There are difficulties inherent in conducting evaluation of children's information seeking behaviour such as the power structures, biases and assumptions that exist between adults and children that one must get beyond in order for research to proceed effectively (Druin, 1999a) (Druin et al., 2010a), which may explain in part this gap in the literature. It is crucial, for example, to make sure that children understand that they are not being examined or tested in any way and that their actions and answers are not made merely with the aim of pleasing the investigator or indeed saying what he/she thinks the adult wants to hear. Quite apart from the issues regarding power structures between adults and children, children, especially the very young, can be extremely poor at expressing their thoughts, both verbally and in written comments, therefore the use of questionnaires, think aloud protocols and other standard data collection methods commonly used with adults may not be appropriate. This will be explored in more detail in Chapter 3: Methodology.

Increasingly, researchers are resorting to developing their own innovative evaluation methodologies to overcome these problems. Merely adapting the existing methodologies to accommodate reading age, and using pictures instead of words in questionnaires, for example has not always been enough to guarantee effective research, neither have various attempts to develop guidelines for the conduct of research with children. One early response to the issue was the pioneering technique known as Co-operative Enquiry (Druin, 1999b) in which children and adults work together on design tasks as part of multi-generational teams. While this methodology was developed in order to improve the design of digital libraries and online information access portals for children, the use of the technique has gone on to inform many subsequent studies of child information behaviour. The technique has been adopted and adapted for the purposes of many other studies with children that have followed in its wake such as building web portals for children (Large et al., 2002) (Large, 2005b). The difficulty with such a technique is that it can require a significant investment in time from both the adults and the children involved in any study where it is employed, e.g. Druin's project team met every weekend over a period of 10 weeks for one study. This level of access to and commitment from children is unusual and can be difficult to obtain.

As with evaluations of adult information behaviour, there is a trade-off between capturing children's behaviour in a realistic environment that is close to the context in which they usually conduct their information seeking activities and observing the tasks in a usability lab, for example. When investigating educational tasks in a naturalistic setting, bureaucratic and other structures in place in schools and libraries that can compromise effective research. Good research takes time, and often teachers and head teachers are understandably reluctant to having their charges absent from class for long periods of time. Teachers may also be wary of researchers being present in the classroom potentially disrupting whatever lesson is taking place at the time. In addition, research in an educational context can be severely limited by the constraints of the school curriculum. The curriculum can impose restrictions and limitations

not just on the topic or content of any exercise undertaken by the children but on the design methodology of the evaluation itself. It is also clear from many studies that evaluation methods that have proved to be highly successful with adults are not as suited, if at all, for use with children. Studies of leisure time information seeking pose additional challenges. With many of such searches taking place in the home, how is a researcher to discover the full picture without moving in?

Another significant problem with much of the research done on children's information seeking has been that many of the surveys that have been conducted in this area have been biased due to parents being asked about their children's use of information sources, rather than enquiries being made of the children themselves. Many studies have also been conducted where data has been collected in the presence of and potentially under the influence of teachers and parents, which raises questions as to whether there are biases in the data collected. Having said this, an over-reliance on self-reporting, which has involved somewhat a good deal of guesswork from children has also led to a great deal of research being published, particularly about their online habits, that is difficult to regard as reliable for this reason. It is perhaps only through wider use of logging and tracking that an accurate picture of children's online information habits will emerge (Large, 2005b) (Duarte Torres et al., 2010b).

In conducting this literature review, I noted how few of the studies that I encountered about children's information behaviour had involved the use of real or even simulated tasks. The table below (Table 2.4) provides an overview of the key studies detailing the nature of the study, the ages of the children involved and, in particular, the person or persons who imposed the task, if known.

Author, year	Study description	Age of - participants (years)	Who assigned task?
(Marchionini, 1989)	Investigation of how novice children use full-text systems.	8-12	Researcher
(Solomon, 1993)	Investigation of search successes and breakdowns.	6-12	Teacher
(Walter, 1994)	Investigation and exploration of children's information needs.	Not known. Mostly teacher reports.	n/a
(Borgman et al., 1995)	Investigation of children's use of online catalogues according to topic.	9-12	Researcher
(Hirsh, 1997)	Investigation of how children find information for different types of task.	12	Researcher
(Schacter et al., 1998)	Investigation of the effect of task design on searching behaviour.	10-12	Researcher
(Gross, 2001)	Investigation of how tasks are imposed in libraries	4-11 + adults	Self-generated
(Agosto, 2002)	Investigation of the criteria that children to use when evaluating websites for different types of task.	14-16	Self-generated vs. imposed
(Bilal and Kirby, 2002)	Comparison of children and adults' cognitive, affective and physical behaviour when searching.	12-15 comparison with college students	Researcher
(Bilal, 2002a)	Investigation of differences in behaviour between self-generated and assigned information tasks.	12-13	Self-generated (with direction from researchers) + some tasks Researcher only
(Bilal, 2002b)	Investigation of cognitive, physical and affective behaviour when searching.	7-12	Researcher and Teacher
(Cooper, 2002)	Investigation of search strategies and how these differ between book and CD use.	7	Librarian researcher
(Branch, 2003)	Investigation of the help that children need when searching online.	15-16	Researcher and Teacher
(Shenton and Dixon, 2003b)	Investigation of the information needs of children of school age.	4-18	n/a
(Slone, 2003)	Investigation of the impact of age on searching behaviour.	Children and adults aged 7-63	Self-generated everyday tasks
(Gross, 2004)	Investigation of children's use of computers in public libraries.	10-14	Self-generated
(Shenton and Dixon, 2004a)	Investigation of how children select search topics.	4-18	Teacher
(Scott and O'Sullivan, 2005)	Investigation of the information literacy skills of teenagers.	14-15	Researcher with input from Librarian

(Kuiper et al., 2005)	Investigation of the evaluation skills of children in their use of web information.	10	Researcher
(Madden et al., 2006)	Investigation of the search strategies used by children with a focus on typical tasks they carry out.	11-12, and 14- 15	Researcher
(Hutchinson et al., 2007)	Investigation children's use of flat and hierarchical categories in searching.	6-7 and 10-11	Researcher
(Bilal et al., 2008)	Modelling children's info-seeking behaviour while using a digital library.	6-10	Researcher
(de Vries et al., 2008)	Evaluation of a portal designed for children to encourage their reflective web searching.	12-13	Researcher
(Walraven et al., 2008)	Investigation of how information and sources are evaluated for different types of task.	14	Teacher with input from Researcher
(Druin et al., 2009)	Investigation of keyword search of interfaces and the level of task difficulty that children can cope with.	7-11	Researcher
(Dinet et al., 2010)	Investigation of children's use of domain knowledge when evaluating search results.	10-17	Researcher
(Duarte Torres et al., 2010c)	Using transaction log analysis to understand children's searching behaviour.	Unknown	n/a (Logging)
(Jochmann-Mannak et al., 2010)	Investigation of the support that children's search engines provide vs. support provided by Google.	8-12	Researcher
(Nielsen Norman Group, 2010)	Large investigation of the usability of children's websites (and a few designed specifically for adults).	3-12	Researcher
(Francke et al., 2011)	Investigating children's attitudes to reliability of sources.	15-18 approx.	Researcher with input from Teacher
(Gossen et al., 2011)	Investigating differences in adult and child searching behaviour via log files.	All ages (kids and adults)	n/a (Logging)
(Eickhoff et al., 2012)	Investigation of ways to identify struggling searchers then classifying searchers by search roles.	8-12	Researcher
(Kammerer and Bohnacker, 2012)	Investigation of children's success when using natural language queries.	8-10	Researcher
(Duarte Torres et al., 2014)	Using transaction log analysis to understand children's search behaviour.	Unknown	n/a (Logging)
(Gossen et al., 2014)	Investigating differences in adult and child scanning of search results.	8-11 + adults aged under 59	Researcher
(Vanderschantz et al., 2014)	Investigation of search strategies, and how this differs between book and Internet use.	9-11	Teacher
(Bilal and Gwizdka, 2016)	How task type and grade influences query formulation and result selection.	11-13	Researcher

(Borlund, 2016)	Investigation of differences in information-seeking behaviour according to type of information need.	14-17	Researcher
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Table 2.4: Overview of Key Studies of Child Information Behaviour

It can be seen from the table above that of the c.50 published studies listed, when the 6 studies that did not involve any assignment of tasks are omitted (due largely to these being studies involving logging analysis of public access computer searching interactions), only 5 of those remaining featured any degree of use of self-generated tasks: (Agosto, 2004), (Bilal, 2002a), (Gross, 2001), (Gross, 2004) and (Slone, 2003) with the rest involving imposed tasks. Of those c. 40 studies involving imposed tasks, only 9 explicitly involved any degree of teacher input to what were largely researcher-designed information tasks (Bilal and Kirby, 2001) (Bilal and Kirby, 2002) (Branch, 2003) (Francke et al., 2011) (Walraven et al., 2008) (Shenton and Dixon, 2004b) (Solomon, 1993) (Vanderschantz et al., 2014) and only 3 of those papers reported a study that relied on purely teacher-imposed tasks: (Walraven et al., 2008) (Shenton and Dixon, 2004b) (Solomon, 1993) (Vanderschantz et al., 2014). There is therefore, arguably, a gap in the computer and information science literature regarding studies of such tasks, and a bias in our knowledge and understanding of child information-seeking behaviour due to a reliance on studying those tasks that are researcher-designed.

Section 3 Summary

My review of the literature in the area of child information seeking revealed the following similarities and differences with adult information seeking as well as a number of gaps in our understanding of child information behaviour and how best to support it:

- **Similarity:** in common with adult information seekers, child information seekers will always take and prioritise the most convenient path to finding information that is acceptable for their

purposes. The principle holds true regardless of their searching proficiency, or their level of subject expertise.

- Similarity: in common with adults, children are more motivated and successful in performing self-generated searches than they are in performing imposed tasks.
- Similarity: in common with adults, home and on-the-move information seeking by children is becoming more prevalent.
 - There remain gaps in our understanding of child information seeking behaviour in these contexts and how this relates to their information behaviour in other contexts.
- Difference: in contrast with most adults, children do much of their information seeking in the educational context and are thus subject to imposed tasks in a manner that adults tend not to be.
- Difference: children do more of their information seeking in the presence of and with the involvement of others than adults typically do.
 - There is a gap in our understanding about the role of and support from other actors in child information seeking in all contexts. The involvement of others in the process has not yet been fully explored.
- Difference: children find query formulation and reformulation extremely difficult, far more so than adults, which leads them to abandon searches more quickly than adults, meaning that their search sessions tend to be shorter than those of adults.
- Difference: children's difficulties with querying tend to be due to a lack of domain knowledge, low reading ability, lack of vocabulary, and problems with spelling and typing, all of which are more severe than those experienced by adults. Related to these issues, children, much more so than is the case for adults, are also more reliant on the language and terminology used in task instructions to form queries.

- Difference: even those children who have been using computers since birth (and this is a far more common experience among the child population than it is among the adult population at present) experience the same difficulties with typing, reading etc. seen in children for whom this is not the case. This supports the growing body of evidence that the notion of the “digital native” is not a particularly useful or meaningful one.
- Difference: the same issues of reading ability, lack of domain knowledge and lack of vocabulary that impact on child querying also create challenges in their interaction with and assessment of search results in a way that is more pronounced than in the case of adults. Children are even more reluctant than adults are to scroll search results, and are conservative about choosing sources, often relying on the finding of a Wikipedia page on the first pages of results to satisfy an information need, for example.
- Difference: children appear to have different notions of relevance from adults, are less questioning of information sources, have different conceptions of authority and may be more swayed by colourful graphics and other aesthetic properties when making relevance judgments than adults are.
 - There remain gaps in our understanding of child notions of relevance and how best to support these.
- Difference: related to relevance, the notion of success in children’s information seeking is one that remains poorly defined in most contexts. Some research has pointed to significant differences between child and adult notions of this concept.
 - There are gaps in our understanding about how children conceptualise success in information seeking and how this contrasts with adult notions of the same.
- Difference: children tend to use natural language queries, frequently written as sentences or framed as questions, and often at either end of the scale in terms of being overly specific or lacking specificity in a

way that contrasts with adult behaviour. However, several logging studies have revealed a tendency for children to use short keyword searches in contradiction of this.

- These contradictory findings reveal a gap, or at least a level of uncertainty, in our understanding of children's querying style.
- Difference: the non-linear nature of child interaction with information means that their search processes are less efficient than those of adults and even the simplest tasks have the potential to be far more time-consuming than those of adult information seekers. Coupled with the tendency of children to abandon searches very quickly, there are pronounced differences between child and adult search processes.
- Difference: child information-seeking behaviour is difficult to model as so much of their interaction with information is non-linear, "loopy", and non-rational in nature due to the multiple uncertainties they experience in that interaction. This uncertainty, and the resultant non-linearity, is much more pronounced than is the case with adults.
 - The challenges of modelling child information behaviour mean that there are gaps in our understanding of that behaviour.
- Difference: there are multiple well-established and critiqued models of adult information seeking behaviour, but few that model child information behaviour. The models that exist or that have been argued to encompass child as well as adult information seeking behaviour are generally more applicable to children in older age groups due to the inability of younger children to employ multi-source searches, or to use abstract thought.
 - There is a gap in the literature regarding information seeking models that are wholly applicable to children, and this is especially the case where younger children are concerned.
- Difference: there are physical differences between adults and children and also between children at different stages of

development that mean that certain input styles are particularly challenging for children. Children continue to find mouse and trackpad gestures a challenge, especially in their younger years, even if they have mastered, for example, touch gestures such as swiping and tapping.

- Difference: evaluation of child information seeking behaviour is challenging due, for example, to the limitations of certain methodologies. Evaluation has tended to rely on tasks that are inauthentic in terms of design and situation and has often employed evaluation techniques and tools that are poor at capturing children's experiences of information seeking.
 - There is a gap in the literature regarding studies that use real tasks in studies of child information seeking in the classroom and elsewhere and of detailed methodologies for carrying out such research.
- Difference: age plays a much greater role in the information seeking behaviour of children than it does in that of adults and also has an influence on the research tools that can be used when investigating it. Where difficulties in information seeking exist, these tend to be more pronounced in younger children than they are in their older counterparts.
 - There remains a gap in the literature regarding younger children's difficulties in seeking information. The majority of studies have been conducted with children aged 11 years and older, largely due to the challenges of conducting research with younger children.
- Difference: children require more emotional support in their information seeking than adults do.
 - There remain gaps in the literature as to how to provide this emotional support or how to include it in models of child information seeking.

- Difference: children experience difficulties in using search engines and websites that are more pronounced than those difficulties experienced by adults. In addition, children find those search engines designed specifically for them, no easier to use than they do adult search engines. Similar findings result when the usability of children's sites vs. adult sites is tested, in fact, children report finding the adult sites easier to use than those specifically designed for children.
 - A gap in our understanding of child information behaviour is suggested. No search engine that addresses the particular needs and additional difficulties of child information seekers has yet been designed despite the limitations of general search engines. Perhaps researchers and designers have been asking the wrong questions about what is needed or have been too focused on the priorities that adults project on children rather than on children's genuine needs.
- Difference: boys and girls are closer to each in their levels of enthusiasm for technology today than was the case in earlier decades, but differences in preference and ability still exist, often due to developmental differences.
 - There remain gaps in the literature regarding how these gender differences impact on information seeking behaviour in different contexts.

My review of the literature and the gaps identified led me to envisage a study of child information seeking and the support required for it that properly accounted for differences in age and gender, was not wholly focused on children aged 11+, which acknowledged the role of others in that process e.g. as task setters, information channels or as support, and that made use of authentic information tasks in a variety contexts. Accordingly, I formulated the research questions below.

For real information tasks:

- **RQ1 How do children define success in information seeking and how does this differ from adult perceptions of success?**
- **RQ2 How does a child's age influence the amount of support that is required from others in order to complete a task?**
- **RQ3 How does a child's age influence the information channel chosen to complete information tasks?**
- **RQ4 How does the context or situation influence child information seeking behaviour?**
- **RQ5 What influence, if any, does gender have on children's information seeking behaviour in respect of each of the elements mentioned RQ1-RQ4.**

In the next chapter, Chapter 3 Methodology, I will outline the manner in which I approached answering these questions and in Chapter 4 I will explain the Study Set Up that was used in order to do so

Chapter 3 Methodology

Introduction

In this chapter I outline the methodology that was employed for the research undertaken for this thesis. I describe my research motivations and the challenges inherent in developing a methodology suited to answering the research questions outlined in Chapter 2 Literature Review, and the journey that I took in evolving a methodological approach for that purpose, with particular reference to ethnography and emergent design. In doing so, I discuss a number of alternative approaches that I considered, and justify my choices with regard to the approach eventually taken. I go on to outline the research tools that were employed to carry out data collection within the methodology and discuss why these tools were particularly suited to making the investigations necessary for answering each research question. A table listing the types of data to be collected is included as well as a table providing an overview of the data sources that were created and analysed as a result of the investigations. The chapter discusses the approach that was taken with regard to data analysis and introduces the factors that were to be used in performing this analysis. The contribution of this chapter is in its description of a methodological approach for investigating the information behaviour of children performing real information tasks and in its description of a method for exploring the information experiences of primary school-aged children using artefacts in focus group situations.

Research Motivations

At the outset of my research for this thesis I was particularly interested in investigating how children performed real information tasks, in educational contexts in particular but with reference also to their out-of-school information seeking. Much of the literature on children's information-seeking behaviour is focused on evaluating how children perform researcher-generated tasks rather

than the real information tasks that children would encounter in the classroom. I was keen to investigate instead how children were performing teacher-imposed information-seeking tasks in the course of their normal everyday schoolwork: how, and how well they were doing this, what difficulties they were encountering, what they learned or otherwise gained from the experience, how teachers presented the tasks to children both in terms of how children were instructed to perform the task, what direction and provision was given in terms of information resources, and what the teachers' motivations and expectations were in setting tasks. Given that a new educational curriculum had been introduced relatively recently in Scotland, one that had moved to a style of learning that was more cross-curricular than had been the case before, I was also interested in how information-seeking in schools might be changing in terms of how it fitted into the wider learning that children were undertaking. Given the increasing availability of home and mobile Internet, I was also curious as to how children's experiences with information outside of school might differ from or be impacting on their interactions with information at school, and vice versa. I was interested also in finding out more about children's preferences regarding information sources for particular tasks and in different situations and was keen to investigate this behaviour with regard to age and gender also. Ultimately, no one study could hope to investigate all of the facets mentioned above, but, as my reading in the area continued and my discussions with teachers, and my experience of working with children in other contexts evolved, I came to settle on a few particular areas of interest, and these, along with research ideas that emerged as my study progressed (of which more later) guided the formulation of the research questions.

Research Question Requirements

In this section I discuss the particular requirements of the research questions that I had to address in order to maximise the possibility of investigating them successfully. My overarching aim of investigating real, imposed information tasks in the environment where these were normally carried out seemed to

suggest situating the study in a school context. Addressing the issue of there being relatively few studies conducted with children under 11 years and leaving room for a study of children at multiple stages of development meant situating the study in a primary school setting. My interest in the changing curriculum, coupled with a desire to conduct a study that would have a reasonably wide applicability, meant that I chose to set the study in a state primary school, rather than in a private or independent school (where only a small percentage of the population are schooled and, in general, where alternative curricula such as the English national curriculum or International Baccalaureat are being followed).

To answer **RQ1** on success in information seeking and the differences between child and adult perceptions of this, I would require to collect data that would reveal both child and teacher perspectives. Data would have to be collected that reflected the point of view of those conducting the task i.e. the children and also the point of view of the imposers of the task i.e. the teachers. The national and local perspectives with regard to the curriculum were available to view online and would require little further data collection, though it would be wise to discuss with teachers the exact guidelines they were following in this regard. I would need to understand what child and teacher expectations of the task had been at the outset, which indicated a need for a pre-task exercise or questionnaire of some sort completed by the children, access to teachers' curricular guidelines and data capture of the teacher's perspectives on these, perhaps via interview. It would also be prudent to capture the thoughts of the children and the teacher once tasks had been completed, exploring how well each thought the task had been undertaken and exploring issues related to satisfaction. Children's thoughts could be captured via a short post-task questionnaire, for example and could be explored in further depth via interviews or focus group activities. Teachers' thoughts regarding task outcomes could be captured via a number of means, including any written comments or feedback they left on children's exercise books or assignments and, via interviews. It would also be useful to collect data on what was occurring as tasks were undertaken, to understand how children's

conceptualisation of the tasks and their conceptualisation of their performance of them evolved as the tasks proceeded. This requirement pointed to a need to conduct observations during the tasks, not just of the children's behaviour but also of any interactions with and instructions from teachers while they were engaged with the task. Capturing this would provide further data about teachers' conceptions of the task also (and would perhaps feed into the data required to investigate **RQ2** on support for information seeking).

To answer **RQ2** on support required in information seeking at different ages, evidently at least 2 cohorts of children of different ages or at different stages of learning would be required to make this comparison. Keeping the study within the primary school context, it seemed clear that to conduct an investigation of child information-seeking behaviour of the type I was interested in, I would have to involve children who already had well-established reading and writing skills, therefore the study would have to be conducted with children in the concrete operational stage of learning, as discussed in Chapter 2 Literature Review. To ensure that there was sufficient difference in the level of cognitive development between the age groups studied, I surmised that working with the oldest children in the school, **P7** (aged 11-12 years), who are at the higher end of the concrete operational stage, as well as with at least one other cohort who were close in age to the lower end of the concrete operational stage, would be fruitful in this regard, which indicated also working with children in **P4** (8-9 years) or **P5** (9-10 years). Answering this question seemed particularly reliant on establishing the child perspective as to how they had approached and carried out the task, though the teacher perspective would also be useful to capture. To investigate the child perspective on the support required would require at least some observation of the tasks as they proceeded and perhaps also some post-task data collection in the form of a post-task questionnaire or focus group. Teacher perspectives could be gathered, post-task, via verbal or written feedback to the class or to individuals or via interview.

To answer **RQ3** on preferred information channel according to age, I would require to find a way to establish which information channels were being used in preference to others at different stages of a child's development. Again, I would require to study at least 2 cohorts of children, separated by at least a few years in age. I would need to know which information channels were available while tasks were being conducted, which information sources, if any, children had been directed to use by the teacher, either via written instructions they had been given, or via any verbal instructions given prior to the commencement of the task or while the task was being undertaken. This pointed to the need to use observations both of the children doing the task and of any direction they received from the teacher either before or during it. It would probably not be possible to observe an entire class conducting the same task simultaneously with any degree of efficiency, nor to be confident, even with sampling, of capturing everything via observation alone, therefore a means of taking children back to the task might have to be devised. To investigate why particular information channels had been chosen in preference to others available suggested that I would need to enquire directly, perhaps by conducting post-task data collection with the children such as post-task questionnaires or focus groups. Further insights could be gathered regarding children's choice of information channel via teacher interview.

For **RQ4** on the influence of context or situation on information seeking, I would require to understand the environment of each class and the wider school in detail, as well as full details of each task undertaken in terms of instructions, time allowed, groupings of participants and resources available. I would also require to find a way to understand what children were doing outside of school time in terms of information seeking, harnessing how that might differ from their information seeking experiences in school, and to investigate also how those out-of-school information experiences might be influencing how they interacted with information at school or how this impacted on how they perceived school information tasks. Conducting research with children out-of-school, particularly in home contexts can be very challenging to organise, and

the use of observation in those situations can be decidedly impractical if not impossible. I realised this early on and considered that a non-observational approach might be necessary for this aspect of the study, using tools such as a survey and perhaps also some interviews. It would also be worthwhile to capture the teacher perspective on the children's information seeking behaviour outside of school and to capture teacher perspectives on the influence of out-of-school information behaviour on what happened in the classroom.

For **RQ5** the requirements were pretty straightforward. I required a way to find out how girls and boys were performing when tackling the same information tasks and to make sure that any research tool that was used gathered perspectives from as many boys as girls, where possible. It would be particularly important to keep this in mind when it came to using sampling rather than using data from the whole class e.g. when designing the make up of focus groups. It would also be necessary to make sure that all of the tasks chosen to be investigated for the study were completed by both boys and girls (which was indeed the case for all of the tasks that are outlined in Chapter 4 Study Set Up), and that any analysis undertaken would involve a gender perspective for all of the measures that were used.

In addition to the requirements outlined above, it would be necessary to design a study that would allow a way of comparing children of different ages performing similar real tasks in order to make the age comparisons that are required by **RQ2** on the support required for information seeking at different ages, and **RQ3** on preference of information channel at different ages, in particular. While it would probably not be possible, sensible or even ethical for children at different stages of learning to carry out exactly the same tasks, particularly as this would involve interfering with the teachers' plans for the classes and would remove or dilute the real task ethos of the study, it might be possible to study children of different ages performing tasks that were of a similar design in terms of instructions, resources and expected outcome, and I elected to take advice from teachers as to what these tasks might be.

Choosing an Approach

Once I had chosen a school to work with (of which more in Chapter 4 Study Set Up) understanding how to approach the issues above led to much reading and documentary analysis of curriculum documents and guidelines as well as discussion and negotiation with teachers and head teacher to understand which area or areas of the curriculum would be most suited to situating the study in a way that would meet the requirements of the research questions. I had to try to gain, as far as possible, an understanding of the information tasks or activities that would be undertaken, and to ascertain when, by whom and in what context they would be carried out. I would need access to class schedules, curriculum guidelines and, where possible, task descriptions and ancillary materials such as worksheets and information resources provided for those tasks. I discuss in more detail how this proceeded in Chapter 4 Study Set Up. Briefly, when I discussed the requirements of my study with the teachers, those parts of the week where children were engaged in “topic work” (defined in Chapter 4) emerged as the most practical for situating the study. My reading of the curriculum documents supported this. Teachers were then able to provide me with copies of the guidelines that they would be following in relation to class topic work and an approximate schedule and task outline for some, but not all, of the tasks that would be undertaken in relation to each topic. I had these discussions with teachers of children in **P7** (11-12 years), **P5** (9-10 years) and **P4** (8-9 years). Even with full access to the curriculum guidelines at the start of the school term and the supporting dialogue with teachers, it was difficult to know which information tasks might be the best ones to focus on, but it was possible to at least start thinking about which tasks might be suitable for investigating particular elements of my research questions, which tasks could either be completely ignored or were best left to be understood as part of the context in which children operated. The uncertainty regarding the “best” tasks, coupled with my desire to understand the full information context, and the requirement, discussed earlier in this chapter, to make extensive use of

observations pre, during and post-task was one of the key challenges of this study, and it pointed to the use of an ethnographic approach, the theoretical basis and justification for which I explain in the next section.

Use of Ethnography

Ethnography, a type of field study, is a research approach that has the intention of gathering empirical data on a society or culture. It is a specific kind of observational science that provides an account of a particular culture, society or community and it is this observational aspect that made it particularly suitable for the study at hand: we saw in previous sections how central the use of observation would be to this study. Ethnographic studies are a way of uncovering people's real desires, of gaining an insight into their lives and following their own stories and interests (Bell, 2014), which again indicates the utility of the approach here. I was keen to understand not just what children experienced in class while doing the tasks, but what they brought to the tasks from their other in-school and out-of-school experiences. Ethnography is used in a wide range of disciplines but has been traditionally associated with the social sciences, (Pickard, 2007 page 111) where it has often been employed to uncover the social organization of activities. Since the early 1990s, ethnography has been used increasingly in computer science (Crabtree, 2003), following a longer history of use in information science. Such long established use in studies within related domains made the case further for its use here also.

When considering which approach to use, I did consider alternatives. In a subsequent section I discuss why an experimental approach would not have been suitable, for example. One of the other approaches I had considered was a case study and it is worth considering what that might have entailed and how it would have differed from the ethnographic approach chosen. Pickard has described ethnography as contrasting with the related methodology of the case study in that the focus of an ethnography is in describing and interpreting a social and cultural group whereas a case study is concerned with developing an

in-depth analysis of a single case (Pickard, 2007, page 111). In addition, ethnography generally demands prolonged engagement within the context, whereas a case study will typically involve visiting a site at regular intervals to collect data that can be predefined in advance (Cresswell, 1998). This second aspect in particular made me decide that the ethnographic approach was preferable to that of the case study. My desire to investigate real tasks and my realisation that it would be difficult to ascertain from the outset which of these to focus on, or even to understand fully when these would occur meant that the idea of pre-defining the data collection as per the demands of a case study, was not going to be practical. A further inspiration for my use of ethnography came from (Grills, 1998) who claimed that “there is no real alternative to ethnographic study for understanding the practical accomplishment of every day life”. This “everydayness”, the real tasks, and the real situation of the tasks made the case for using ethnography particularly attractive and I was persuaded that this was indeed a powerful approach for undertaking a study that would answer my research questions.

Much of ethnography is about story telling or, as the name suggests, painting a picture of a people. The main research instrument in this storytelling is the researcher herself, using the data collection techniques and her interpretations to formulate and then present a description of the context studied. Some authors have argued that humans are “the only instrument which is flexible enough to capture the complexity, subtlety and constantly changing situation which is the human experience” (Maykut and Morehouse, 1994, page 26). The researcher can apply her own knowledge and human experience to understand and interpret the events observed. This particular feature of ethnography i.e. the need for responsiveness to changing situations indicates strongly the need to consider emergent design within the approach, as well as a need to be alert, reactive and responsive. I address this later in the chapter. With the human as the main research instrument, ethnography therefore requires little in the way of technology to perform it successfully. Beyond a basic notepad and pen the main tools of ethnography are the researcher’s senses, thoughts and feelings

(Fetterman, 1989, page 41), however these can of course be supported and supplemented by more concrete data collection tools such as those described in the next section. This low-tech and unobtrusive aspect of ethnography also appealed due to my desire to investigate children's information seeking as authentically as I could, without disrupting activities, changing flow, or influencing outcomes.

Data Collection Techniques in Ethnography

While ethnography is often imagined to be largely passive observational activity, in order to gain insights into as many perspectives as possible and to cover all bases, a good study will involve the use of multiple data collection techniques. In addition and most crucially, the process of conducting an ethnography should also be regarded as *participatory*. "Broadly conceived, participant observation thus includes activities of direct observation, interviews, document analysis, reflection, analysis and interpretation (Schwarz, 1997 page 47). I have already alluded to my sense that a research tool such as a questionnaire might be required pre and post-task, and that interviews with teachers (and perhaps children) might also be required to supplement observations. An ethnographic approach allows for the use of such tools as well as qualitative methods such as focus groups and surveys, all of which had seemed likely ways to gather data for various aspects of the research questions. Questionnaires, for example, can be a good way of discovering beliefs and perceptions held by the population that is being studied ethnographically, that cannot be uncovered via observation alone.

A theme of storytelling flows through ethnography, both in the way in which researchers are encouraged to report their work, and, some authors such as Fife, have argued that participants in ethnographic studies should also be encouraged to write their own stories (Fife, 2005). Such approaches can be particularly useful when employed with children, particularly children of primary school age for whom writing stories is a familiar, perhaps even an

everyday activity. I kept this in mind as I got to know the classes better to ascertain whether I could use story writing as an evaluation technique, or whether there was already a storytelling activity within their everyday school experience that could be drawn on. Also, when considering the design and use of focus groups I held the idea of children telling the story of how they performed the task in mind as a way in which I might conduct those sessions.

At the outset of the study, I was keen to explore the different information contexts in which children were conducting their information seeking; indeed **RQ4** is wholly concerned with the influence of context on the behaviour. Using a variety of data collection methods, particularly for more high or macro level issues, is crucial for allowing the researcher to understand the context of the community she is studying. "Investigation of the macro environment is likely to include documentary analysis, interviews and observation in order to establish context" (Pickard, 2007 page 114). Given this, it became important to make plans to acquire and study early on national curriculum documents, school curricular guidelines, school and local authority policies, national and local statistics, and to consult teachers and other education specialists about the study, all of which I did before commencing the research.

When conducting ethnographic research, data collection tools such as observation, interviews and questionnaires are commonly used. While observations tend to occupy the greater part of the researcher's time and effort, the types of interviews employed in ethnography can involve little more than a researcher making notes about small talk that they encounter among a population, which I knew would be useful for understanding more about the tasks in the moment that they were happening. I was also aware that ethnographic studies often involve extensive interviews of long duration, which would be useful for capturing participant reflections about tasks recently completed, though my feeling was that these longer interviews might be better for understanding more about context and macro level issues, particular where the teachers were concerned.

Ethnographic studies have several advantages over experimental approaches where research with children are concerned. Fewer demands are placed on children in a natural familiar setting, in particular there is no need for them to adapt to the unfamiliar and perhaps stressful or unsettling environment of a lab. Ethnographic studies are also attractive for practical reasons: the logistics of physically transporting children from their usual daytime location to a lab, along with the attendant need for adult supervisors can be extremely difficult to arrange and facilitate, particularly where multiple experimental sessions are required. As well as the additional challenges that working in an environment over which one has little control, there are specific considerations that must be made when conducting field studies with children and we will encounter these throughout this chapter and also in Chapter 4 where the tasks evaluated for the study are described.

Practical Implications of Ethnographic Approach

Once I had decided that an ethnographic approach might be desirable, there were some practical decisions that I had to make. We saw earlier Cresswell's argument for the need for prolonged engagement in ethnographic studies (Cresswell, 1998), which indicated a study of many weeks duration, particularly given my desire to work with several age groups and given my lack of certainty about which exact tasks would be evaluated and when. I set aside 6 months to complete the fieldwork, the exact dimensions of which are described in Chapter 4. Should I be present in school for the full school week? Possibly: because such an approach was likely to lead to obtaining a more holistic view of the class beyond the relatively narrow focus of their topic work lessons. However, arguably, the cross-curricular nature of the topic work (e.g. there would be art and other creative tasks among the more information-seeking focused activities) meant that this was less of an issue than might have been the case in other curricula. Spending all week in school meant that I might get to know classes more quickly and establish trust earlier than would be the case were less

time spent, but the whole week approach would also pose challenges when deciding which of the classes to spend time with and when, given my desire to observe several in parallel. Spending all week in school would perhaps lead to more interactions and conversations with teachers, and might therefore lead to an earlier and deeper understanding of how the tasks would function within the topic work.

There were many additional arguments against situating myself within the school 5 days a week. Given the level of observational activity that would be required to answer my research questions and the effort involved, bearing in mind how central ideas of capturing complexity, subtlety and changing situations (Maykut and Morehouse, 1994 page 26) are to ethnography, along with the importance role of the observer's thoughts and feelings (Fetterman, 1989), I knew that it would be a challenge to reserve enough of my attention for the topic work sessions while being present for all of the other lessons also. There was a risk that being ever-present would introduce too much noise into what was already likely to be a noisy dataset due to my lack of control of the activities in terms of their design, organisation and scheduling. By limiting how much time I spent in school each week to certain types of lessons, I would give myself the opportunity to leave soon after observing a session and therefore have the chance for reflection e.g. (Schwarz, 1997 page 47) about what I had just seen or witnessed, and to use the notes made in response to this to maintain a research diary as recommended by (Pickard, 2007 page 214). Having time away from classes would also allow me the chance to organise the data that I had gathered and to perform some basic analysis to make sure that the data I was collecting was of the right type to answer the research questions and to deal with emergent design decisions, of which, more in the next section. Having such breaks away from classes would also aid me in making strategic decisions about where to target future research efforts within the classes. Not being ever-present in school would also allow me the opportunity to discuss my emerging findings with colleagues and supervisors to inform both the

immediate and future direction of the study and to design and produce any research tools that were required for later stages.

In the end, in response to the requirements and considerations outlined above, I settled on a study that would be based in a state school and would involve at least two classes separated in age by at least 2 years, performing real information tasks in class, with some data collection also on their out-of-school information seeking. An ethnographic approach would be followed, employing observation of the classes (children, teacher and any other actors involved in the information tasks) during topic work sessions, with some accompanying follow up interviewing and focus groups. I would be based in the school chiefly during the topic sessions and the real information tasks imposed by the teacher during the topic work sessions (of these, more in Chapter 4 Study Set Up) would be studied as well as the wider context in which these took place. In the next section I describe how the study design evolved as my understanding of the environment in which it was situated grew. I describe also the ways in which I responded to that growing understanding in terms of research question refinement, study design and research tool development.

Emergent Design

In many ethnographies, by their very nature the research question or questions that are defined at the beginning of a study will evolve as the study continues (Hammersley and Atkinson, 1995). It is often better therefore, to begin with an interest rather than with a rigid question (Pickard 2007, page 114). For my study, I began with some questions in mind that had emerged from the literature review, however there were some adaptations made to these as the study progressed and I will explain in what follows how this occurred.

I have already alluded to the large degree of uncertainty that I had to deal with in regard to the scheduling and utility of the information tasks that were available to include in the study. This uncertainty, which is often present when

an ethnographic approach is adopted, meant that there were many ways in which the study that I originally planned was altered or enhanced by my increasing understanding of the research environment in which I found myself. Certain research emphases were modified, or disappeared entirely following particular observations or logistical happenstances and the resultant changes of focus and strategy led to the emergence of, or need to develop additional research tools, or to modify approaches to capture the additional data required. Authors such as Lincoln and Guba have described this as follows “ research design must therefore be played by ear. It must unfold, cascade, roll, emerge” (Lincoln and Guba, 1985 page 203). I have found the SAGE Encyclopedia of Qualitative Research Methods of particular use in explaining how my study evolved, specifically the chapter on Emergent Design. The author defines emergent design in the following way

“Emergent design involves data collection and analysis procedures that can evolve over the course of a research project in response to what is learned in the earlier parts of the study. In particular, if the research questions and goals change in response to new information and insights, then the research design may need to change accordingly. This flexible approach to data collection and analysis allows for on-going changes in the research design as a function both of what has been learned so far and the further goals of the study”.

(Morgan, 2008)

This description fits my study well. I had arranged to be present for all of the topic work sessions for 3 classes/age groups, which gave me the chance to observe all that they did in those sessions before deciding which particular tasks to focus on and how best, beyond observation, to evaluate these. An early emphasis that I had placed on task design with a specific research question about its influence on information behaviour and choice of information channel was demoted, as the theme of success in information seeking and the differing perspectives of adult task setters and child task performers appeared to be

particularly prominent in the data when analysis was performed early on in the study. This shift in focus occurred both in response to the observations I was making day to day and also due to the ad hoc analysis I was able to perform following each session. The SAGE Encyclopedia recognises this phenomenon in the following way:

“Ethnography is a useful illustration of this process because the on-going analysis of field notes leads to a shifting interpretation of both which issues are relatively well understood and which issues require further observations, so that ethnographers make design decisions on a almost daily basis-about how to pursue their emerging interpretations”.

(Morgan, 2008)

The single most valuable activity that I undertook in relation to data collection when conducting this study was in using the written and audio records of my observations and reflections to create a research diary that I updated as soon as a session had been completed. See also (Pickard, 2007 page 214) mentioned earlier in this chapter. As well as observations, the diary contained reflective comments about what I had learned during those observations and an element of analysis of the data. I drew on the diary daily as the study proceeded to inform my strategy for the remaining time of the fieldwork, and also when I came to write up and organise my findings following its completion. In this, the diary was truly invaluable, and keeping it up-to-date daily, was, as the quote above suggests, a very important discipline that allowed me to make strategic and occasionally spontaneous decisions about where next to focus the data collection or analysis. I have included a streamlined version of this diary in Appendix 1 chiefly for the purposes of informing the reader of the timeline of the study and to give a sense of what a typical session entailed. However, the fuller version was sufficiently detailed to allow thematic analysis to take place both for use in the emergent design process and in the on-going and final data analysis.

As well as the reduced emphasis on the task design aspect of the study, some emergent logistical issues led to my situating the study in **P7** and **P5** only, rather than in **P7**, **P5** and **P4** as I planned originally. Despite initial discussions with the **P4** teacher that had seemed promising with regard to the availability of information tasks for evaluation, after spending around 4 weeks (8 sessions) with this class it became apparent that little of the work they were carrying out involved information tasks that were of a type that would be easily evaluated or compared with the information seeking activities that the other classes were engaged in, thus it was decided to continue the research with **P7** and **P5** only. Spending this time with **P4** was not at all wasted however as it increased my perspective on the wider school and the children and teachers within it and my confidence in working with younger children in particular.

A key aspect of study design that emerged as the study proceeded and indeed has come to be one of what I consider to be the main contributions of this thesis, was the realisation that the artefacts of information seeking i.e. the pieces of work created as a result of the process of carrying out the task, could provide a powerful way of understanding what children had understood about a task, how they had gone about completing it and how they regarded their success or otherwise in that task. This realisation occurred very soon after, if not during the **Poster Task** undertaken by **P7** in the first few weeks of the study and came to be a feature of much of the evaluation activity undertaken with both **P7** and **P5**. Remaining with items that were already available in class to use as research tools, early on in the study, children were observed to complete the KWL grid (of which more later) provided by the teacher to outline their existing knowledge of the topic and ideas for what they wanted to find out about as the topic proceeded. In a sense, the entries children wrote were often like the storytelling mentioned by (Fife, 2005) and they showed some potential for use in understanding children's experiences and priorities without asking anything additional of them. Also, early in the topic, **P7** children (and later **P5**) were seen to complete a so-called "traffic light evaluation" about their experience of carrying out a task. Once I had established that it would be permissible for me to

make copies of these and therefore to collect data via these feedback mechanisms, the use of such materials became central to my evaluation of the tasks in a way that was non-intrusive within the regular class activities and not disruptive to the flow of the tasks. Making use of existing mechanisms in this way removed some of the challenges that can exist when designing feedback methods for children by employing instead methods that were routine for them and could be used without any additional explanations or preparation being required. When I came to work with **P5** slightly later on in the study following my initial few weeks with **P7**, similar ready-made tools and artefacts were found to be available and accessible in that classroom also.

Building on this theme of using “what ever is there”, I realised that analysing the jotters or exercise books in which children completed the required written (occasionally hand-drawn or glued) aspects of the tasks might also be useful for understanding how they had perceived and responded to the tasks. In addition, while I realised that interviews with teachers would be useful for gaining their overall perspectives on the tasks and how the classes or perhaps even groups within the classes had performed, it was clear that capturing teacher perspectives on individual pieces of work and therefore more detailed data at the micro level would be more difficult via this method. My document analysis of the curriculum guidelines had revealed that teacher assessments tended to employ a protocol called “two stars and a wish”, which involved providing two positive comments about the work, plus a comment about a way in which the work could be improved. I realised early on that teachers tended to record these comments directly on the children’s exercise books and thus I asked to be granted full access to these to understand what teachers thought was good or lacking about each child’s performance of particular tasks, in order to compare with the children’s own perspectives on this, with particular relevance to **RQ1** on success in information seeking.

Another key way in which the study design evolved as my understanding of the research environment increased was in my decision to place more emphasis on

investigating the influence of the situation or context in which information seeking was carried out as per **RQ4** and to give some added consideration also to the impacts that out-of-school information seeking experiences might be having on in-school activities. While I had an existing interest in these aspects at the beginning of the study that came from my own previous experiences of working with children and teachers and from my reading of the literature, one incident focused my mind in this regard. In an early session with **P7** where children had been asked to find out the definitions of certain war-related terms, one group of children were observed to be performing the task using a feature of Google of which I had not previously heard. As word got around the class, more and more groups used this feature to complete the task. It emerged that one of the children had first learned about this feature from a parent, and I became more determined to find out more about the home context of each of these children for this reason, wondering which other information behaviours were originating from outside of school and perhaps also proliferating to other pupils. I initially thought that I might involve parents to investigate this but the investigations that I carried out with children (a survey and focus groups), and, to an extent their teachers, gave me what I believe were sufficient data to draw conclusions about the home context that children were experiencing.

Another unexpected development that informed my decision to place more emphasis on **RQ4** arrived in the form of a homework task that **P7** carried out about the Clydebank Blitz. This task provided a low effort opportunity to understand better what was happening out-of-school. I had not seen this task mentioned on the curriculum guidelines initially and so had not planned for it. However, it proved to be one of the richer tasks that were evaluated for the purposes of the study. The homework aspect of this task allowed me to investigate how a formally worded imposed task might be completed in an environment over which the teacher had no control and where the child had some (but not necessarily always) more control of their information access than they had at school. Observation of the task as it proceeded would not prove to be feasible but the task output, which was in the form of a report, had the

potential to provide a way of capturing how well the task had been done and which information resources had been used, for example. Focus groups or interviews could also be employed to uncover more about children's experiences of this out-of-school task and the teacher perspective could be gained from access to written comments on the reports and from interviews.

The final key aspect of the study design that evolved as the study proceeded was with regard to the amount of time spent with each class. At the outset, I had been open to working with each class on multiple topics, but, in line with grounded theory (discussed later on in this chapter in relation to data analysis), I ended my data collection when I had sufficient data to answer my questions. In the case of **P7**, from an observation point of view this was achieved following the completion of the first topic that I observed (WW2 Home Front), though I did remain for a few weeks afterward to complete activities such as teacher interviews, and other follow up research activities such as focus groups with the children. I used part of those additional few weeks observing certain aspects of a second topic with **P7** (on science) but it soon became clear, as my analysis of the first topic developed, that I already had enough evidence to satisfy the demands of **RQ1-RQ5**. In any case, there were few information-seeking activities with the science topic that appeared to have the same level of richness as those I had evaluated on the earlier topic. With regard to satisfying the demands of **RQ2** and **RQ3** on age differences in support for information seeking, and preference of information channel, discussions with the **P5** and **P7** teachers revealed that two of the tasks undertaken by these groups had many things in common and, while not identical in every way, it was suggested that these might be useful for making a comparison of the type required for **RQ2** and **RQ3** while retaining the "real task" emphasis of the study design. These tasks were, for **P7**, the **Poster Task** and in the case of **P5**, the Astronauts Task (**Astro7**). Further details of these tasks and how they were evaluated are provided in Chapter 4 Study Set Up. The Astronauts task was the only task that evaluated with **P5**, but this alone required observational effort spread over 6 sessions as well as a few weeks of follow up focus groups. Additionally, I had spent several weeks of

acclimatisation with the **P5** class to understand their experience of the wider topic and had taken part in more casual activities such playing games and completing jigsaws to establish my role with them. I say more about this in Chapter 4. By the time the Astronauts task had been completed, some on-going analysis had satisfied me that I had enough data to make a meaningful comparison with the **Poster Task** and therefore no further tasks were formally investigated with this group. In the next section I describe the research tools that I used.

Research Tools

In this section I will outline the research tools that were used to answer the research questions. Further details of the manner in which these were deployed in relation to specific tasks will be outlined in Chapter 4 Study Setup.

We have seen in a previous section that the key research tool in ethnographic studies is observation but that additional research tools may be employed to capture data that cannot be collected via observation alone. In my study I was keen to capture several perspectives: the child perspective, teacher perspective, and, to an extent, the national or government perspective on children's information seeking. The latter of these is discussed in relation to the curriculum in particular in Chapter 4 and was investigated chiefly via document analysis and, to a lesser degree via discussions with education professionals and academics.

To gain the children's perspective on their information seeking behaviour I used the following tools:

- **Observations (class and group)**
- **Pre and post task questionnaires**
- **Survey**
- **Artefact analysis***

- **Focus groups using artefacts***
- **Traffic-light evaluation***
- **KWL grid***

and to gain the teacher perspective:

- **Teacher interviews**
- **Teacher written comments***

Those tools that are marked with (*) relied on materials that were already in use by children and teachers, the others had to be designed.

In what follows I provide a description of each research tool with some theoretical background and justification for the choice of tool or tools.

Observations (class and group)

Theoretical background: Observations provide a useful means of collecting both quantitative and qualitative data about information tasks. They are useful for investigating the information seeker's point of view and can draw out 'tacit' knowledge, i.e. those aspects of the activity or process that might be taken for granted and therefore easily overlooked. Using this approach is particularly suited for use when investigating long-term and longitudinal studies of information seeking. Observations require only moderate preparation time from the researcher and tend not to impact on participants' time, unlike say, questionnaires or interviews. They require little in the way of resources to carry out.

Observations in ethnographic studies are often conducted via first-hand observation of daily activities or participation, with the researcher, as far as possible, taking the role of a participant observer with an insider role in the activity (Hammersley and Atkinson, 1995). The researcher takes part in the

events that he or she is studying in an attempt to gain an understanding of the behaviour and thought processes of those being studied, that goes beyond that possible via observation at a distance e.g. via hidden cameras or other video footage of a situation. In effect, the researcher attempts to see the world from the point of view of the participants. In order to carry out successful observations, researchers have to take into consideration factors such as the age of the participants, including their ages relative to one another, social structures such as peer groups, gender and friendships for example.

How observation was used in the study: Observations of activity were carried out in several different contexts but chiefly during topic time in the main classroom used by each class. Children's activities and child-teacher interactions were observed in scheduled class time in the classroom or, occasionally, in the "open area" environment of the school where several computers were situated. In order to elicit the most useful and unbiased data, every effort was made to ensure that the events being observed were as authentic as possible and the observations involved as little disruption to the activities underway as was achievable. The class as a whole was observed in its interactions with the teacher, generally at the start and close of each session while I sat discreetly to the rear of the class. There were other occasions when observation was more focused e.g. I would sit with a group of children as they carried out a task but did not otherwise take part in the activity. These more localised, focused observations took place in a number of different settings but were generally conducted sitting at the table where the group question normally worked, at a computer workstation to the rear of the class or at the computers that were situated in the open area of the school. While carrying out my observations I made discreet handwritten notes, and, following each session, I recorded an audio file of my observations and reflections on them. Out of sight of the children (this was important as I did not wish them to think that I was assessing them in any way) I made photographs of any artefacts that were produced. It was not, of course, appropriate to retain the originals. The facsimile

artefacts would then be available to analyse and the originals could be used to support focus group sessions about particular tasks.

In a few instances, children were operating outside the classroom environment and effort was made where possible to observe both individual and group learner activity in these other contexts, for example a library visit and a museum excursion that were both related to the topic work. Brief summaries of these visits are included in Appendix 2. During these visits I chose to “follow” a group of children during the course of the activity and while these activities were not a key focus of the study, they were useful in gaining the fullest picture of the information experiences that these children encountered in relation to their topic work. General observations were also made of activities that were going on elsewhere in the school while I was present, in the interests of being able to understand the wider educational and environmental context in which children and teachers were operating.

Pre-task and Post-task Questionnaires

Theoretical background: Questionnaires are a collection of open or closed questions and can be an effective means of gathering both quantitative and qualitative data about an activity. They have some advantages over other data collection methods such as interviews: responses are gathered in a standardised way and are therefore more objective. Using a questionnaire tends to be a relatively quick way in which to collect information. They are useful when working with large groups such as with a class of school children, however in some situations they can take a long time not only to design but also to apply and analyse. Questionnaires must be designed with a high degree of care: a poorly worded or structured questionnaire will generate data that is scant, poor in quality or both. The wording of questionnaires used with children takes particular effort to do well, particularly with younger children, and many researchers have advocated using a pictorial approach for scales e.g. (Hanna et al., 1997), or at least an approach that involves a limited number of words to

avoid literacy issues or that avoids the use of Yes/No questions to avoid biases that children have in responding to such questions (Breakwell, 1995).

How pre and post-task questionnaires were used in the study: Short questionnaires (Appendix 3) were employed to capture the child perspective of tasks in the study. They were used when evaluating group activities, e.g. I would use a pre-task questionnaire immediately following children's receipt of their instructions for the task, carry out an observation as they completed the task and conclude the observation by using the post-task questionnaire. Questionnaires were not completed by children themselves, partly to avoid the issues inherent in designing them for children (as discussed above), also, for reasons of speed and to avoid interfering too much with their performance of the task. Instead, as each group under observation began their task I asked them the questions verbally and made a written record of their answers before they commenced the task, effectively using the questionnaire as the basis of a short structured interview. The questionnaires used in this study were adapted from some that had been used extensively with children aged 11-12 in a previous study undertaken by the researcher (Nicol and Landoni, 2005).

Survey

Theoretical background: see section on questionnaires above.

How surveys were used in the study: A survey about hobbies and interests and the information needs and preferences related to these was completed by the P7 children close to the end of the study to collect data about children's out-of-school information seeking activities. The survey can be seen at Appendix 4. and the results are reported in Chapter 7. I decided to conduct this piece of data collection with the P7 class alone rather than with the younger children. It seemed unnecessary for the purposes of answering my research questions (**RQ4** on context and situation of information seeking in particular) to involve younger groups also. Carrying out this data collection with an older group gave

me a greater degree of flexibility about which methods I could use than would have been the case with the younger children, whose more limited literacy and comprehension skills would have made the use of a survey far less suitable. A draft survey was piloted with several children in the same age group as those in the study, as well as with a few parents and teachers, before the final draft was settled on.

Artefact Analysis*

Theoretical background: Student materials or the artefacts of learning (or in the case of this study, information seeking) can provide a rich source of qualitative data regarding the participants in a study. Many of the activities undertaken by children during the study resulted in the production of a physical artefact, and it was envisaged that analysing such materials would provide data on children's' interaction with information sources and with other participants i.e. other children and the teacher. This type of data takes little time to collect and has little impact on the participant but may take a large amount of time to analyse, so it was envisaged that only a sample of children's work would be examined. Content analysis is often used in relation to transcripts of interview and focus group data to understand the importance of certain concepts to the speaker and to the scenario they are speaking about, based on, for example, frequency of utterance (Krippendorff, 2004). In this study I used content analysis in an additional, slightly different way, to evaluate the physical pieces of work produced by the children both in terms of the written content and the pictorial content, to understand how they had interpreted the task and what was important to them. Other studies such as e.g. (Alexandersson and Limberg, 2003) have described using a similar artefact analysis approach for understanding meaning.

How artefact analysis was used in the study: This technique was employed when evaluating all of the tasks involved in this study. At a very basic level, I used this technique to ascertain how much of a task had been completed, by

each child, by each group and by the class as a whole. Additionally, the technique allowed me to discover more about how children had interpreted tasks, the information sources they had used, how well they had completed the tasks in line with the instructions and guidelines given, what emphasis they had given to particular elements of the task and also as a way of seeing what they might have understood or misunderstood about the task. The method also provided a means for understanding better which parts of the task had been interpreted as being of greater or lesser importance and, within groups, whether children had been acting as wholly as individuals or part of a team.

Focus Groups Using Artefacts*

Theoretical background: Focus groups are meetings of “involved” people discussing experiences or opinions with a moderator present to keep the group to the focus required for the particular research being undertaken. This method can be used to conduct formative or summative evaluations of human behaviour such as information seeking. Focus groups can be used in a self-contained way or can be linked to data collection occurring via other means such as in an ethnographic study like the one reported on here. Focus groups are useful for generating hypotheses, identifying key issues, developing themes identified in research data. Focus groups can be carried out follow observations, to ascertain explanations for behaviour (Pickard, 2007 page 220). As Gorman and Clayton observe, “in a group situation many people are prompted to say, or suggest ideas which may not occur to them on their own” (Gorman et al., 2005, page 143). This research tool can also be used as the last point in data collection for the purpose of confirming emerging findings, from, for example a long period of observation. The main advantage of using focus groups to collect data is that they allow large amounts of information on a topic to be obtained easily and within a short time, which was of particular importance given my desire not to interrupt the flow of classes more than was necessary. For the purposes of this study, groups of children were brought together to discuss the issues that arose during the course of the topics they were studying to elicit their thoughts and

feelings about their experience of the different tasks they had been asked to carry out.

Interview situations with children can often be tricky and therefore methods such as focus groups can be compromised because of difficulties that children can have in verbalizing thoughts and experiences (Druin, 1999). In interview situations children often try to please adults, are easily distracted, and have difficulty expressing their likes and dislikes (Hourcade, 2008). In addition, there are power structures between adults and children that can be difficult to get past (Druin, 1999) in such research scenarios. Capturing experiences by asking children to produce drawings has been demonstrated to be an effective technique (Sylla et al 2009, Xu et al 2009) and the use of such props in conducting effective interviews with children was shown by (Nicol and Hornecker 2012). Part of the success of (Nicol and Hornecker 2012) came from the children's pride in explaining what they had created and pointing out what the different parts of the drawing referred to. To support better interviewing during the focus groups, I hypothesised that encouraging children to tell the story of their information seeking e.g. (Fife, 2005) using the work that they had produced could be a very effective way of taking them back to their experience of carrying out the task. It would not be possible to observe every group as they performed each task, so the possibility of carrying out a post hoc discussion of the task with as many groups as had carried it out, by using this supporting mechanism was a very attractive one.

How focus groups were used in the study: Focus groups were conducted in the week or weeks immediately following the completion of a task while the task was relatively fresh in the children's mind. Pieces of work aka artefacts, such as posters or exercise books were used as talking points to focus the discussion. The schedules for these groups are available at Appendices 5-9. Focus groups were generally conducted away from the classroom to minimise disruption and a mixture of single sex and mixed sex interviews was conducted. Each focus group session lasted between 20 and 30 minutes. Note that the first

task employing this method took place 3 weeks into my time with the children so I had already had time to establish my role and interaction style with them. Groups participated one at a time with each group seated around a table outside the classroom. An audio recording was made of each focus group. The children were made aware that they were being recorded and were encouraged to speak clearly and one at a time. With the artefact positioned in the centre of the table children were asked to take turns to show me their e.g. poster and to tell the story of how it had been created, what they had included in it, what specific elements (textual and pictorial) were about, why they had been chosen and where they had come from. In this way I used features of the artefacts as a way into interviewing the children and to understanding their experience of carrying out the task: what they had understood, misunderstood, liked or disliked about the task and how they thought they had interacted with others in order to complete it. One of the more challenging aspects of using focus groups was the level of transcription required, which multiple voices can make more difficult, particularly in the occasionally boisterous setting of a group of young children, and the subsequent analysis. However, employing a semi-structured interviewing approach in the focus groups was done in order to make the latter slightly easier.

Traffic Light Evaluation*

Theoretical background: Before commencing and after completing many of their class activities children completed evaluation sheets provided by the teacher which used a “traffic light” system involving rating their performance of aspects of the task either “Green”, “Amber” or “Red”. This is a technique that children were used to using to evaluate their performance and thus using it in the study did not require any new learning or additional effort from the children, nor any preparation from the researcher. A facsimile of the traffic-light evaluation sheet can be seen at Appendix 10.

How research tool was used in the study: As well as providing data about the children's thoughts about the task, the questions asked on the evaluation sheet also provided insights about the teacher's expectations of the activity.

KWL Grid*

Theoretical background: The KWL grid is a short written reflective exercise completed by children at the beginning of each topic that requires them to complete a short form containing a few open questions about their prior experience, motivations and expectations before their first exposure to the learning materials of the topic. Children were used to completing such exercises at the start at end of each topic and thus there was no additional learning or instruction required for the children, nor any additional preparation from the teacher. The impact on participants of collecting this data would therefore be low, and the fact that it was completed during normal class time meant that it would be straightforward to collect responses from a large number of children without much effort. An example grid is at Appendix 11.

How research tool was used in the study: While I did not have access to this data for all of the children involved in the study I was able to obtain it for P7's experience of the WW2 topic. I used the data to gain an insight to the attitudes and priorities of children to the topic before it commenced and after they had completed it.

Teacher Interviews

Theoretical background: Interviews were conducted to elicit qualitative data on the teacher's experience of the information seeking behaviour of the children over the course of the topic. Interviews can be used in formative/developmental or summative/retrospective evaluation and they are often used in information and library research. Interviews "allow people to respond on their own terms and within their own linguistic parameters, providing them and the interviewer with the opportunity to clarify meanings and shared understanding" (Bertrand

and Hughes, 2005) but there are limits in that it can be difficult to get participants to recall precise factual data in great quantities (Pickard, 2007 page 172) thus I knew that I could not rely on interviews alone to get the teachers' perspective and would need to find further ways to do this, of which more later. There are a number of approaches to interviewing and careful consideration was given as to which approach would elicit the most useful data. A standardised, open-ended interview will make sure that questions are asked in the same way across a population by different interviewers, for example, but in the case of this study with only one researcher and few interviewees to consider, it made more sense to choose a semi-structured approach to keep the conversation focused and to allow individual experience to emerge but to avoid losing important, unanticipated, information. Interviews require only low amounts of preparation time, require a relatively low amount of participant time, require little in the way of resources to conduct and are straightforward to administer which made this an appealing method given the time pressures on both the researcher and teachers. Analysis of the data collected from interviews tends to require a moderate amount of time and effort, though thought had to be given to how to deal with transcription.

How research tool was used in study: Informal teacher interviews would be held at the beginning of the study to establish which topics and tasks might be fruitful for investigation and to uncover motivations and expectations. Longer more structured teacher interviews would be held mid-topic, soon after the first focus groups with children were conducted to explore the teacher's thoughts on the tasks that had already been completed and then again near the close of the topic to explore her thoughts on the final tasks and of the topic overall. Interview schedules were piloted with several primary school teachers (one retired, one currently teaching).

Teacher Written Comments*

We saw above that interviews are not particularly useful research tools for gaining large amounts of very detailed data, and this was particularly the case when trying to find out about the teachers' opinions of group and individual performance. I was able to access the written assessment comments that teachers had made in the jotters in which children completed their topic work, and on the reports that children completed for a homework task, and also for the task about astronauts called **Astro7**. For the **Astro7** task the written feedback was given in a slightly different way, being added to a section of the traffic light evaluation sheet completed by children. All of this feedback tended to be of the "two stars and a wish" variety, with both positive and more critical/room for improvement type comments made for each child. This data was easy to collect and required no additional effort from teacher or researcher and did not disrupt the usual learning and assessment protocols in any way.

In summary, I planned to deploy a large variety of research tools throughout the study to capture child, teacher and national/governmental perspectives. The main research tool would be observation but this would be supplemented by short pre and post-task questionnaires and focus groups and interviews after the tasks and topic were completed. Focus groups would make heavy use of the work produced to act as prompts to support the discussion and existing assessment and reflective materials completed in class would provide additional insights into child and teacher experiences of the task and topic.

Materials and Data Collected

We have already seen in some detail the data collection tools that would be deployed in the topic. What follows is a description of the additional materials that were collected over the course of the study, following guidelines devised by Crabtree for those pursuing ethnographic studies (Crabtree, 2003 page 53). These are not data per se, but materials that supported my understanding of the data and provided assistance particularly when performing data analysis.

Item to be collected	How it was collected
Activity or job descriptions	I acquired detailed descriptions of the activities and tasks that pupils would encounter: task sheets presented by the teacher, plus any supplementary materials supplied. These are described in Chapter 4 as each task is introduced.
Rules and procedures that govern particular activities	I acquired curriculum guidelines or “topic planners” that teachers referred to during the course of the topics with details of activities, learning intentions etc. Use was made of the curriculum documents devised by the government that underpin the activities and describe how they fit in with the rest of a pupil's learning.
Descriptions of activities observed	I made handwritten notes during observation sessions including any instructions or informal assistance or interventions made by others. Care was taken to note how long activities lasted, where they took place, who was involved and how the activity fitted into the timeline of the topic. Attention was paid to the details of the equipment that was available to carry out the activity. Notes were made regarding the groupings of pupils that carried out the activity.
Recordings of the talk taking place between parties involved in observed activities	In general, during the observed activities talk was recorded in the form of written notes. Only the interviews/focus groups were recorded
Informal interviews with participants explaining the detail of observed activities	Short structured interviews (using the pre and post task questionnaires) were conducted with children immediately following each observation session. Later, focus groups were conducted with groups of children and interviews with the teachers to discuss activities that had been observations.
Diagrams of the physical of the	A plan of the two classrooms (P5 and P7) in which the study was conducted is included in Appendices

environment studied, including the position of artefacts.	19 and 20. Details of class layout and locations where tasks and other interactions took place are included in Chapter 4.
Photographs of (documents, diagrams, forms, computers etc.) used in the course of observed activities	I took many photographs of the work produced by the children, e.g. posters as these were often used as a talking point in focus groups and contained evidence of the activities undertaken. Jotters (exercise books) in which children made notes during classroom tasks were photocopied. Jotters (exercise books) in which children did their home research project were photocopied. Fact files produced by P5 children in the Solar System topic were photocopied.

Table 3.1: Ancillary Items to be Collected

The table below shows the extent and coverage of the focused data collection.

Name of task/activity	Description of related datasets
Poster Task	Written observation notes on task introduction. Written observation notes of Group 3 Munitions Workers. Photographic images of 6 posters produced 6 x audio recorded focus groups with children 30 x completed traffic light evaluation sheets
P7 Air Raid Precautions Task 1 (ARP1)	Written observations Photocopies of written work
P7 Air Raid Precautions Task 4 (ARP4)	Handwritten observations of 6 groups 30x photocopies of written work 5x audio files of focus groups with groups 1, 3, 4, 5, 6.
P7 Leisure search survey	29 x completed paper surveys 2 x audio recordings of focus groups (4+4)

data	
P7 Clydebank Blitz Homework task focus groups	Written observation notes: how task was introduced. 2 x audio files of focus groups with 8 (4+4) children Photocopies of 9 homework jotters
P7 Rationing task (Rationing6)	Written observations of children using PCs to complete task 6 x short feedback questionnaire data Photocopies of written work
P5 Astronaut task (Astro7)	Written observations of groups researching astronauts 6 x short pre/post task questionnaires groups A-G Photocopies of 18 Astronaut fact files produced Photocopies of 18 written assessment sheets completed by children and teacher
P7 Museum visit	Written observation notes
P7 Library visit	Written observation notes
P7 & P5 general contextual data notes	Written notes on general class non-task specific observations, classroom context, physical layout etc.
P7& P5 Curricular info	Topic planners for both classes
P7 & P5 Task info	Task sheets for ARP, Rationing and Astronauts Carousels +miscellaneous supporting materials
Teacher Interview 1	Audio recording+transcript of April interview with class teacher
Teacher Interview 2	Audio recording+transcript of June interview with class teacher
Day by day observation recordings	15x audio files recorded immediately post session with researcher's reflections

Day by day observation notes	Written observation notes in diary format recording observations and reflections on every session attended of each class.
KWL Grid	Completed reflective exercise sheets for P7 class on WW2 topic
Additional materials	28x photocopies of P7 topic jotters Written observation notes for 8 sessions with P4.

Table 3.2: Datasets Collected

Researcher Role

In a previous section of this chapter we encountered the idea of the researcher as the main research instrument in an ethnographic study. As such, I had to give careful consideration to the role that I would adopt, particularly given the involvement of children and the power structures that can exist between children and adults (Druin, 1999). On beginning a field study, a researcher must immerse him or herself in the context of that study and also with the people who operate within that context. Much of this process is concerned with the need to become an “insider”, and to move away from being an “outsider” looking in on the situation. This process can require a great deal of time to accomplish; hence the need for prolonged engagement. Much of that time will be spent in identifying the key players or stakeholders in the setting, e.g. before the commencement of my study I made several visits to the school and had several phone calls with teaching and ancillary staff as well as representatives from the parent council and from the local authority education department. I made much use of the school website to understand the wider activities and priorities of children, staff, teachers, parents and others there. I also took advice from colleagues from the university’s education department; I was keen to understand not only what I should expect to encounter but also to understand what would be expected of me while present in the environment. Pickard points to this need to understand the social and cultural aspects of a ethnographic research environment in order to fit in (Pickard, 2007 page 117). Ethnography

“involves establishing rapport in a new community: learning to act so that people go about their business as usual when you show up; and removing yourself every day from cultural immersion so that you can intellectualise what you’ve learned, put it into perspective and write about it convincingly” (Bernard, 2011 page 37). In making this statement, Bernard reveals the flipside of fitting in and becoming an insider: the danger of becoming too close to the situation and its participants. There is a need to also be able to remove oneself from the situation and be able to interpret and report on what has been found there in an objective way and I felt that by not spending all week carrying out observations (as detailed earlier in this chapter) that I was more able to do this than had I been embedded in the classroom 5 days a week. Some researchers in this area suggest that those who wish to conduct studies of this type should become teaching assistants for the period of the study, however I felt that the emphasis on pedagogy would remove my objectivity when conducting the evaluations. Also, as a staff member taking instructions from teachers and head teacher I would have had even less control over what I was able to do and when than was the case in the role I adopted.

In practice, I made it clear to children that as a participant observer in their activities they were allowed to ask me questions, however I had to be careful not to become an information source and influence how they completed the tasks. I also had to establish myself as not being in the role of a teacher, which is difficult, as being the sole adult or one of only a few adults in a classroom can lead to this assumption being made. I received some assistance from the teachers in this regard in that semi-frequent reminders were given about this to their classes in the early stages of the study. Children were also discouraged from calling me “Miss” as they tended to do in early sessions and to use my first name instead, a familiarity that was not allowed between them and their teacher. Teachers also called me by my first name at all times. Hammersley has described this sort intervention as involving either “participation in an established role in the setting...or in a “visitor” or specially created researcher role” (Hammersley, 1990 page 30). In my case, I was introduced as “a visitor

from the university". I gave careful consideration to my style of dress: tidy, but not at all formal and used language with the children that was informal but not overly friendly or casual. I made sure that I always addressed class teachers by their titles in front of the children. I made a point, on a few occasions of asking teachers' permission to do certain things in the hearing of the class so that children would not see me as an authority figure in the same way that the teachers were. This had to be managed carefully so that my distinctive role was understood by children, without compromising the perceptions of other adults in the school whose confidence I also needed.

Teachers made children aware that I was carrying out research about information behaviour. They would also have been able to see this from the permission letters that were sent home. On the few occasions when children asked for more detail about the research, I gave fairly generic descriptions of what I was interested in, in a way that I thought would not influence or bias their future answers. There is always a question to be asked about whether the researcher should reveal his or her research motivations, and whether doing so might damage any rapport that has been established between the researcher and the participants. Pickard argues that it is essential for the researcher to be open about her motivation; on the basis that honesty will get you further than deception (Pickard, 2013). However if research participants are aware of the exact goals of the research it is likely that their behaviour and responses to questions will be diluted or modified in some other way, thereby incurring many of the problems inherent in employing an experimental approach (discussed later in the chapter). It is therefore advisable that, within reason an ethnographic researcher should conceal what he or she knows or thinks about the population in order to obtain the most honest or voluntary answers from them.

The fact that children felt able to ask questions about the research a few weeks after I had joined the class was a sign to me that I had established good rapport with them, as were invitations from them to take part in games in the

playground, or to look at toys or books they had brought from outside school, or to see items e.g. artwork that they had made in other classes. Another part of this familiarity or rapport was gained by participating in some of the children's scheduled non-topic activities such as helping with a jigsaw, and accompanying children on school trips and outdoor activities such as litter picking in the playground. In the case of the trips outside of school, being one of the required "responsible adults" on such excursions allowed further trust to develop between me, the children, staff and parents. At the same time, while I was not in a teaching role, I was allowed to use teachers' social spaces in the school and was careful to do so in a way that would gain and maintain teachers' trust also. Having this additional access to teachers' spaces allowed me to develop a better understanding of the wider school context and to gain ideas about which interview questions might be asked and how to phrase these. The study took place in an area of the city which I knew slightly but not particularly well thus I chose to spend time immediately before and after research sessions either preparing or writing up notes in cafes or other venues close to the school in order to get a better sense of the community immediately around it, from which a majority of the children in the school were drawn.

Why an Experimental Approach Was Not Pursued

In this section I will comment briefly on why a more quantitative experimental approach was not used in this study. There are a few features of quantitative information and computer science research that I believe made such an approach unsuitable for answering my research questions. Controlled experiments of the type used in information retrieval and human computer interaction research, for example are adapted from methods first used in psychology research. The key feature of such a controlled experiment is that it tests a hypothesis: typically, this will be a hypothesis about the effects of a designed change upon some measurable performance indicator and will require the identification of a number of variables from within that hypothesis that are known as dependent and independent variables. Quantitative research typically

begins with a theoretical framework that emerges from a literature review and it is from this framework that the hypothesis or hypotheses will emerge (Pickard, 2007 page 18). The study that I had in mind did not fit well with this description: I was not planning to make a change or intervention of any type, merely to discover what was happening in the situation or situations in which children were seeking information.

Another key feature of experiments is that they require the definition of a formal procedure, that is a schedule of events that will take place during the course of the research period as well as the details of the micro-events that will take place during each individual research session. I have already discussed that, while I had access to an approximate schedule of events, these were always subject to change, as were the planned micro-events during sessions, which were often in unpredictable order, were missed out entirely or substituted for others. Formal experimental procedures provide linear description of what participants will do during an experiment and, if properly described, should provide sufficient detail to allow others to repeat the experiment at a future time. I am able to provide this formal procedure with a timeline of the research events that occurred to some extent, but only now that the research has been completed is it possible to do so. In theory, this study could be repeated given the level of detail that I am now able to provide, but I could not have formalized this procedure at any point during the research. Minimising the effects of confounds is extremely important in experimental design and this can be achieved by controlling the order in which particular tasks are completed and the conditions in which these are run (Blandford et al., 2008). Again, I had no control over the order in which tasks were completed, nor by which groups or individuals, nor over the conditions in which they were carried out. As we have seen, the use of an experimental approach is not always suitable due to the need to keep such stringent control on the procedure, tasks, environment, and indeed it seemed antithetical to what I was trying to achieve in the study, therefore a more qualitative approach was adopted.

With regard to my choice of methods, increasingly, logging has been used in studies in studies of child information behaviour e.g. (Eickhoff et al., 2012)(Duarte Torres et al., 2010) and I did consider that I might use it to understand how children were searching and what they were finding, prior to my initial discussions with teachers, and before I had seen and understood the classroom set up. In the end, given my focus on the wider information seeking behaviour of children i.e. not limited to their use of technology to do this, I decided not to use logging. An additional factor in my decision was the lack of control that I had over which tasks were being carried out when and where. I would never be entirely sure who had been using which computers and for what purpose. Some of the laptops that were used by children in tasks were not specific to the class, for example and were often used by children from other classes for a variety of purposes, and also by teachers and classroom assistants. Had I provided laptops, this would have removed an element of the true environment of the study and I might also have felt obliged to spend a lot of time repairing or otherwise fiddling with these laptops to set them up, or to fix them in the event of breakdowns, while missing a lot of the core observational data to be collected. For similar reasons, I elected not to do any filming in class either, choosing instead to make handwritten notes, supplemented by audio-recorded reflections immediately thereafter.

Data Analysis

Due to the inherent volume of observational activity, coupled with the desire to be unobtrusive, ethnographic researchers rely heavily on the use of note taking using pen and paper. This study was no exception. With the additional textual observation data emerging from the transcripts I created from reflective audio recordings made following each observation session, I very quickly amassed a large collection of what was often very detailed data. The immediacy of this type of data collection can mean that understandings, however small, can contribute to the theory arising from the data as the researcher reflects on what she has already learned and what she still needs to explore (Pickard, 2007 page 158).

Given this incremental nature, the analysis and interpretation of ethnographic data is often accomplished by applying a grounded theory approach.

Grounded theory is an approach to qualitative research that aims to produce new theories grounded in the data gathered in a study; the theories developed are the product of close inspection and analysis of qualitative data (Glaser and Strauss, 1971). It is a particularly useful when studying complex systems or subjects where little is known (Strauss and Corbin, 1990) and is a flexible methodology that can allow researchers to deal with complex data. The data gathered in the current study was drawn from multiple tasks, age groups and settings and was gathered by a large variety of search tools in a variety of media. As such, it arguably meets the description of complex. Grounded theory does not require a hypothesis to exist before data collection commences (Strauss and Corbin, 1994 page 273), which is another way in which it was suited to this study. This lack of need for a hypothesis means that researchers may begin their research knowing only that they want to find out about a particular area; they need not know exactly what it is that they expect to find (Adams et al., 2008) before commencing. In carrying out the research, theories can be developed and hypotheses produced to motivate further research. Theories can be developed as soon as the first phase of data collection is complete, then further data can be gathered to validate and expand the theory.

Strauss and Corbin use the term grounded theory to refer to a data collection and analysis technique that is not just restricted to qualitative data, but that may also be seen as an approach to theory building that may include both qualitative data collected via research tools such as questionnaires, interviews etc. and quantitative data from questionnaires, logs and other experimental methods. They argue that “The research findings constitute a theoretical formulation of the reality under investigation, rather than consisting of a set of numbers, or a group of loosely related themes (Strauss and Corbin, 1990). Another key feature of the approach is the possibility of using theoretical sampling, where the researcher deliberately chooses where next to collect data

in order to test the developing theory. For example, if something of interest is noted during an early interview, questions might be asked of particular participants, or in particular contexts to determine whether the finding is universally true or not. In all, grounded theory seemed particularly suited for use in this study.

Data analysis in grounded theory research involves breaking data down, conceptualising it and then re-assembling it in a new way. There are numerous approaches; in one of the best known, (Strauss and Corbin, 1990) developed a system of coding that is broken into 3 stages:

- ***open coding*** involves identifying concepts in the data and joining these with similar identified concepts to form categories;
- ***axial coding*** involves identifying high-level phenomena such as central ideas, events and conditions and strategies related to these phenomena.
- ***selective coding*** involves elaborating upon the earlier analysis.

One of the main difficulties of this approach, is knowing when to stop collecting data. In general, using grounded theory, data collection concludes once the theory has reached saturation, that is all data can be fitted into the existing theory without requiring it to be modified (Adams et al., 2008), in other words, when all new ideas have been accounted for. In my study, this type of coding scheme was used and I also made use of theoretical sampling, particularly in relation to **RQ4** on situation and context where a homework task about the **Clydebank Blitz** and the **Leisure** task focus group arrangements were concerned.

The **Poster Task** influenced how the data analysis proceeded and I had to find a way to simplify this in order to perform the analysis effectively. Following the 3 stage coding scheme described above, a number of factors appeared to be contributing to the overall sense of the **Poster Task** and describing the results

in those terms was both manageable and logical. The table below shows the factors and how these map to the research questions.

Factor	Contribution to Research Questions
Completion rate	Contributes to RQ1 by indicating children’s performance, motivation and task complexity. Also, RQ5 on gender.
Sources used	Contributes to RQ3 by indicating preferred information channel. Also, RQ5 on gender.
Perception of task requirements	Contributes to RQ1 by giving child perspective on what they thought teachers were asking them to do. Also, RQ5 on gender.
How information was searched for	Contributes to RQ3 by indicating search strategies and to RQ2 by indicating how much support was required. Also, RQ5 on gender.
How information was selected	Contributes to RQ3 on preferred channel/source and gives interesting insights into textual and non-textual material. Also, RQ5 on gender.
Task enjoyment	Contributes to RQ1 as a measure of success from child perspective and also indicates the enjoyment produced by the task. Also, RQ5 on gender.
Task success	Contributes to RQ1 by giving child and teacher perspective on how well task was done. Also, RQ5 on gender.
Environmental /situational factors	Contributes to RQ4 in particular regarding influence of context but also contributes to RQ2 by finding out about support required. Also, RQ5 on gender.

Table 3.3 Mapping of Factors to Research Questions

In Chapter 4 on Tasks and Evaluation I will explain how these factors and the research questions to which they refer, relate to the tasks that were chosen for investigation during the study.

Summary

Based on the requirements of my research questions, principally the need for real tasks to evaluate, children to work with, in particular, children of different ages and genders, I designed a qualitative ethnographic state school-based study largely employing research tools that were available in the class as well as a few that I devised myself as and when I understood the dimensions of each task that the teachers intended the class to carry out. My research questions emerged from the literature in the first instance but evolved as my understanding of the context of the research grew. Elements such as task success and influence of situation and context were given greater emphasis as the study proceeded. I was present chiefly for those sessions where the classes were engaged in their “topic work” (explored further in Chapter 4), observing classes at various times as a whole, in their interactions with teachers, or in groups as they performed information seeking tasks. Three classes were observed, though ultimately data from only two of these was collected for a prolonged period. A grounded theory approach was adopted and thus the study was designed to last as long as it would be required to collect sufficient data to answer each of the five research questions, ultimately lasting just short of 6 months. In the next chapter, Chapter 4 Study Setup, I outline the tasks and activities for which data was collected to answer each research question, how these interacted with different elements of the curriculum and which research tools were used to investigate each.

Chapter 4 Study Setup

Introduction

In this chapter I discuss the study setup used to conduct the research. I start by giving a quick overview of the tasks investigated and how these related to the research questions outlined in Chapter 2, and to the data analysis that I intended to do. I then provide some context for the study by discussing the education system and curriculum in which the tasks were embedded. I then explore in more detail the nature of the tasks investigated and explain why they, in preference to other tasks that were available, were chosen as a focus for the investigation and I try to give some sense of the other activities and learning that children were experiencing alongside those tasks singled out for focus here. I outline which of the research methods described in Chapter 3 Methodology were used to evaluate each task and give some details about the school itself and the teachers and children who took part in the study.

Overview of Study

The study was conducted in a Scottish state primary school in an urban location in West Central Scotland. I carried out research activities with 3 classes: **P7** (age 11-12 years), **P5** (age 9-10 years) and **P4** (age 8-9 years). Ultimately, the investigations with P4 were not continued beyond 4 or 5 weeks due the lack of suitable task-based information-seeking activity being undertaken by them during the 6 month period of research activity and thus only tasks undertaken by **P7** and **P5** were fully investigated. **P7** were visited for a longer time than **P5**, and thus a majority of the tasks investigated were tasks that were carried out by them. Further details of the setting are outlined towards the close of this chapter.

Six formal teacher-imposed tasks were evaluated. These are as follows:

- **Poster Task:** a group task carried out in the classroom by **P7** with instructions to use multiple information resource types.
- **ARP1 & ARP4:** two very similar group tasks carried out in the classroom by **P7** with instructions to use books for the former and Internet resources for the latter.
- **Rationing6:** a group task carried out in the classroom by **P7** with instructions to use web resources.
- **Astro7:** a group task carried out in class by **P5** with instructions to use multiple information resource types.
- **Clydebank Blitz:** a homework task carried out by **P7** with no specific instructions on resources to use.

All of these tasks were designed and imposed by the **P7** or **P5** class teachers.

In addition, I conducted an investigation via a survey and focus groups of the out-of-school leisure information-seeking behaviour of **P7**. This, while not a formal task in the same sense as the others, will be described throughout the thesis as:

- **Leisure Task**

The finer detail of these tasks and the suite of methods used to evaluate them will be introduced later in this chapter. Before that, I will provide a brief explanation of why these particular tasks were chosen.

All of these were *real tasks*, which is how I had framed all of my research questions, and all, with the exception of the **Leisure Task** were designed and

imposed by the class teachers rather than by me as researcher. In general terms, I took care to include tasks where children were instructed to use multiple information resources and also tasks where they were instructed to use a particular resource type e.g. “books” or “Internet”, so that I could make a comparison about information preferences and success. I also chose to work with child participants from different age groups who were engaging in tasks of similar complexity to allow comparisons to be made in terms of the support needed, information preferences and perceptions of success at different stages of development. I also chose tasks that were of similar complexity that were completed at home as well as tasks completed in the classroom so that I could make comparisons based on situation and environment. I made sure that I picked tasks where boys and girls were always involved so that I could make comparisons across the genders for all of the aspects of information-seeking behaviour under investigation. In what follows, I explain these choices in more detail in relation to each research question.

To answer **RQ1 How do children define success in information seeking and how does this differ from adult perceptions of success?** I chose tasks where I knew I would be able to gain both the child perspective on how they thought they had performed the tasks and also the teacher perspective. All of the tasks above could be evaluated from both of these perspectives, apart from the **Leisure Task** where really only the child perspective was available, as the leisure information task activities in question were both informal and carried out outwith class time. The **Poster Task, ARP1, ARP4, Rationing6 and Astro7** however, involved information-seeking activities that could be observed both by me and by the teacher, though clearly not all groups or individuals could be observed at all times. The **Clydebank Blitz** task differed in the sense that it was done outwith the classroom so therefore could not be observed by either me or by the teacher as it was being undertaken, however it did have some merit for inclusion in the investigation of notions of success as I will explain in what follows. Each of the tasks, including the **Clydebank Blitz** task involved the production of a piece of written work or artefact, which would not only allow

me to have an idea as to the degree to which a task had been completed, how it had been completed and how well, but would also allow the teacher to do the same. I could also then gain access to the written assessments that the teacher made of the work produced and could ask her further during interview sessions about her assessment of the tasks. I could further use the artefacts produced in focus groups with the children to ask about their notions of success.

For **RQ2 How does a child's age influence the amount of support that is required from others in order to complete a task?** Again, all of the tasks were suited to investigating this question, with the possible exception of the **Leisure Task**, though it would of course be possible to at least ask children about the support aspects of their leisure information-seeking during focus groups, for example, as would indeed also be the case for the **Clydebank Blitz** homework task. All of the classroom-based tasks were observable by teacher and researcher, and an assessment could therefore be made about support required for each of them via observation, and the child perspective would be available both during and post-task. The classroom-based tasks that are of particular relevance to the age aspect of this question are the **Poster Task** and **Astro7**. Each task featured groups of children working with multiple information sources towards the production of physical information artefacts for display to others; a poster and a fact file respectively. The close similarity in terms of both complexity and design of these two tasks (as advised to me by teachers) meant that an age comparison could be made in a fairly straightforward way, certainly more easily than was the case with the other tasks such as **ARP1**, **ARP4** and **Rationing6**, though analysis of these might also feed in to the comparison.

For **RQ3 How does a child's age influence the information channel chosen to complete information tasks?** Again, the **Poster Task** and **Astro7** were particularly suited to answering this question due to the similarity of their design, level of complexity, setting, resources and the two different age groups carrying each out, but there was value also in considering analysis of all of the

tasks in this regard, particularly given that in certain tasks e.g. the **Poster Task**, children were freer in their choice of information channel than they were in **ARP1**, **ARP4** or **Rationing6**. Investigating these latter three tasks alongside the **Poster Task** and **Astro7** might lead to findings on preference of information channels.

For **RQ4 How does the context or situation influence child information seeking behaviour?**, by investigating imposed tasks that were assigned and carried out in the classroom such as the **Poster Task**, **ARP1**, **ARP4** and **Rationing6**, as well as an imposed task assigned in class and carried out outwith the classroom such as the **Clydebank Blitz** task, alongside a non-imposed task such as the **Leisure Task** I was able to investigate a range of situations and contexts encountered by the **P7** class.

For **RQ5 What influence, if any, does gender have on children's information seeking behaviour in respect of each of the elements mentioned RQ1-RQ4?** All of the tasks were suited to answering this question as they were carried out equally by both boys and girls, though of course where the **Leisure Task** was concerned, being done outwith school time and with no artefacts produced, any data collection would be heavily reliant on self-reporting.

As discussed in Chapter 3 Methodology, the main factors that I anticipated using in my analysis of the data collected in order to answer the research questions were as follows:

- **Completion rate**
- **Sources used**
- **Perception of task requirements**
- **How information was searched for**
- **How information was selected**
- **Task enjoyment**

- **Task success**
- **Environmental/situational factors**

The table below indicates the tasks already described in this chapter in terms of their suitability for generating data that would allow such analysis and outlines how this would aid in answering each research question:

Factor	Contribution to Research Questions	Tasks
Completion rate	Contributes to RQ1 by indicating children's performance, motivation and task complexity. Also, RQ5 on gender.	All except Leisure Task
Sources used	Contributes to RQ3 by indicating preferred information channel. Also, RQ5 on gender.	All , though Leisure Task wholly reliant on self-report
Perception of task requirements	Contributes to RQ1 by giving child perspective on what they thought teachers were asking them to do. Also, RQ5 on gender.	All except Leisure Task
How information was searched for	Contributes to RQ3 by indicating search strategies and to RQ2 by indicating how much support was required. Also, RQ5 on gender.	All , with particular focus on Poster Task and Astro7 .
How information was selected	Contributes to RQ3 on preferred channel/source and gives interesting insights into textual and non-textual material. Also, RQ5 on gender.	All , with particular focus on Poster Task and Astro7
Task enjoyment	Contributes to RQ1 as a measure of success from child perspective and also indicates	All

	the enjoyment produced by the task. Also, RQ5 on gender.	
Task success	Contributes to RQ1 by giving child and teacher perspective on how well task was done. Also, RQ5 on gender.	All except Leisure Task
Environmental /situational factors	Contributes to RQ4 in particular regarding influence of context but also contributes to RQ2 by finding out about support required. Also, RQ5 on gender.	All, but particular focus on Clydebank Blitz and Leisure task.

Table 4.1: Factors Guiding Analysis of Tasks in Relation to Research Questions

Note that it is not my intention to argue that the contributions of each of these factors will be limited to the research questions with which they have been matched in the table above, these factors are likely also to contribute to answering some or all of the other research questions, perhaps to a far lesser degree. I have merely matched those factors that I think will be of primary importance in answering each question. The task descriptions provided thus far have been deliberately brief in the interest of maintaining focus on their utility with regard to both the research questions and the intended analysis of the data collected from them. In what follows I will explain in far greater detail what each task entailed and how these were embedded within the wider classroom activities of the classes and how this related to the national curriculum to which they were subject.

Education System

The Scottish education system is distinct from education in other parts of the United Kingdom, in terms of its legislation, structure, curriculum and pedagogy. Children are required to attend full-time education between the ages of 5 and 16 years of age. In the early years (3-5) there is optional pre-school provision that is known as **nursery education**. The first seven years of formal school education are known as **primary education**. Thereafter, there are four years of

compulsory **secondary education**, with a further two years of study undertaken by those who wish to pursue the higher-level qualifications that are required for entrance to **further** or **tertiary education**. Around 4.1% of Scotland's children are educated in private schools (SCIS, 2018) and there is some home schooling but the vast majority of children attend state-run schools that are administered by local authority education departments of which there are thirty-two in Scotland. In urban locations, pupils tend to be drawn overwhelmingly from the immediate geographical vicinity of schools. The curriculum for state schools in Scotland is the responsibility of the Scottish Government at Holyrood in Edinburgh, and is overseen by the government body Education Scotland. In recent years, Scottish state schools have followed the Curriculum for Excellence (Scottish Government, 2007), which will be outlined in the next section.

Curriculum

The national curriculum of Scotland is known as Curriculum for Excellence. It was introduced in a phased way from 2009 onwards and has been in place in all Scottish state schools since August 2010. Covering the age range 3-18 years, the curriculum is applicable to all pupils in either nursery, primary or secondary state education in Scotland (Scottish Government, 2007). Much of the material in this chapter is drawn from Scottish Government documentation regarding the curriculum.

The curriculum was devised to address the development of those skills and qualities that children will require throughout their lives with the stated aim that children should emerge from education as:

“successful learners, confident individuals, responsible citizens and effective contributors”.

(Scottish Government, 2007)

Furthermore:

“The 3-18 curriculum aims to ensure that all children and young people in Scotland develop the attributes, knowledge and skills they will need to flourish in life, learning and work.”

(Scottish Government, 2007)

The curriculum states that children and young people should:

- *achieve the highest possible levels of literacy, numeracy and cognitive skills*
- *develop skills for learning, skills for life and skills for work*
- *develop knowledge and understanding of society, the world and Scotland's place in it*
- *experience challenge and success so that they can develop well-informed views and the four capacities.*

(Scottish Government, 2007)

The subject areas covered by the curriculum are: **expressive arts, health and wellbeing, languages, mathematics, religious and moral education, sciences, social studies, technologies**. Rather than studying these subject areas in isolation, the curriculum considers all learning as cross-curricular. Learning is interdisciplinary so that concepts and skills may be visited and revisited from a variety of different perspectives. The curriculum:

“...should include space for learning beyond subject boundaries, so that children and young people can make connections between different areas of learning. Interdisciplinary studies, based upon groupings of experiences and outcomes from within and across curriculum areas, can provide relevant, challenging and enjoyable learning experiences and stimulating contexts to meet the varied needs of children and young people. Revisiting a concept or skill from different perspectives deepens understanding, and

can also make the curriculum more coherent and meaningful from the learner's point of view. Interdisciplinary studies can also take advantage of opportunities to work with partners who are able to offer and support enriched learning experiences and opportunities for young people's wider involvement in society"

(Scottish Government, 2007)

The curriculum also includes guidance as to how such cross-curricular activity can be facilitated:

"Effective interdisciplinary learning can take the form of individual one-off projects or longer courses of study; is planned around clear purposes; is based upon experiences and outcomes drawn from different curriculum areas or subjects within them; ensures progression in skills and in knowledge and understanding; can provide opportunities for mixed-stage learning which is interest-based".

"The curriculum should include space for learning beyond subject boundaries, so that children and young people can make connections between different areas of learning".

(Scottish Government, 2007)

What this means in practice is that for a topic such as the World War Two: The Home Front topic described in this thesis, which traditionally might have been thought of as a History topic, the topic is instead explored via a series of lessons and activities that might encompass any or all of the subject areas of the curriculum e.g. creating art about air raids or completing mathematics activities focused on calculating rations.

The curriculum segments its guidelines according to five age stages: **early, first, second, third and fourth**. Children in years 4-7 in primary school and therefore in the age range 8-12 years are the focus of the current investigation,

therefore the curriculum information that follows from here onwards will be drawn from those sections of the curriculum regarding the **second** stage of learning (cf. Piaget in Chapter 2). In what follows, I provide a brief overview of those areas of the curriculum that relate to the finding, use and organisation of information at this stage of learning as well as the supporting skills of reading, writing and use of technology.

Curriculum for Excellence: Information Skills

The text below outlines the curriculum requirements of a child at this stage in terms of their ability to find and use information:

Finding and using information

- *Using what I know about the features of different types of texts, I can find, select and sort information from a variety of sources and use this for different purposes.*
- *I can make notes, organise them under suitable headings and use them to understand information, develop my thinking, explore problems and create new texts, using my own words as appropriate.*

(Scottish Government, 2007)

Note the emphasis on note making, use of headings and use of own words. Later in this chapter we will see how requirements such as these make their way into the task guidelines devised by schools for use by their teachers.

The curriculum guidelines provide further guidance as to the abilities children are expected to have with regard to the organisation and use of information;

children are expected to understand the idea of *sources* and the importance of acknowledging these, as well as having the ability to present information in a format which those who access it will appreciate and understand:

Organising and using information

- *I can use my notes and other types of writing to help me understand information and ideas, explore problems, make decisions, generate and develop ideas or create new text.*
- *I recognise the need to acknowledge my sources and can do this appropriately.*
- *By considering the type of text I am creating, I can select ideas and relevant information, organise these in an appropriate way for my purpose and use suitable vocabulary for my audience.*

(Scottish Government, 2007)

Chapter 2's review of literature in the area of children's information-seeking behaviour revealed reading and writing skills as a key determinant of children's success in information tasks. It is therefore worth noting what the curriculum guidelines say that children should be able to do at this stage of development regard to both of those skills. With regard to **reading** the guidelines have the following to say:

Reading

- *I regularly select and read, listen to or watch texts which I enjoy and find interesting, and I can explain why I prefer certain texts and authors.*
- *I am learning to select and use strategies and resources before I read, and as I read, to help make the meaning of texts clear.*
- *I can select and use a range of strategies and resources before I read, and as I read, to make meaning clear and give reasons for my selection.*

(Scottish Government 2007)

And with regard to **writing**, the following:

Writing

- *I enjoy creating texts of my choice and I regularly select subject, purpose, format and resources to suit the needs of my audience.*
- *I can spell most of the words I need to communicate, using spelling rules, specialist vocabulary, self-correction techniques and a range of resources.*
- *In both short and extended texts, I can use appropriate punctuation, vary my sentence structures and divide my work into paragraphs in a way that makes sense to my reader.*
- *Throughout the writing process, I can check that my writing makes sense and meets its purpose.*
- *I consider the impact that layout and presentation will have and can combine lettering, graphics and other features to engage my reader.*

(Scottish Government, 2007)

The curriculum guidelines for writing go beyond writing as an activity in its own right to describe the products of this writing. Note the emphasis on *audience, spelling, structure, formatting and presentation* of the resulting writing. The curriculum goes further in describing these products of writing in a section on creating text that deals with the presentation of arguments:

Creating texts

- *I can convey information, describe events, explain processes or combine ideas in different ways.*
- *I can persuade, argue, explore issues or express an opinion using*

While information seeking for school purposes is not treated by the curriculum guidelines as being wholly reliant on technology, there is an expectation that some of the information seeking activity will proceed via that medium. This is reflected in those guidelines that refer to the use of ICT (Information and Communication Technology):

Using ICT (Information and Communication Technology) to enhance learning

- *As I extend and enhance my knowledge of features of various types of software, including those which help find, organise, manage and access information, I can apply what I learn in different situations.*
- *I can access, retrieve and use information from electronic sources to support, enrich or extend learning in different contexts.*
- *Throughout all my learning, I can use search facilities of electronic sources to access and retrieve information, recognising the importance this has in my place of learning, at home and in the workplace.*

(Scottish Government, 2007)

In the next section I will look at how some of these curriculum guidelines are implemented in the form of *topic work*.

Topic Work

A significant part of the primary curriculum at this stage of learning is delivered via what is known as *topic work*. Each topic will incorporate activities that address many if not all of the curricular subject areas in the cross-curricular manner already described in this chapter. Topic work includes lessons that involve whole-class teaching, individual, paired and group work in class and the occasional homework assignment. Topic work might also involve a field visit, e.g. in this study children took part in a library visit and a museum visit.

However, a large part of topic work comprises classroom-based **structured activities** carried out by children working in groups with their classmates to achieve an intended **learning intention**. At the second stage of learning, a class will typically study 3-4 topics each year with topics typically lasting 4-12 weeks, occasionally longer. Around four hours per week will be dedicated to lessons and activities associated with the topic, with that time tending to be spread over several sessions, typically two. For the classes involved in this study, topic work was done in two sessions per week of approximately two hours each and each class was working on their third topic of that year. I joined each of the 3 classes during their topic time, spending approximately four hours with each for most weeks of the study in addition to the other contextual observation activities undertaken.

Topic Planners

Building on the national curriculum guidelines, a class teacher will have his or her own guideline document or 'topic planner' to follow for each topic, which outlines in detail the lessons and other activities that comprise the topic and the specific **learning intentions** for each. Topic planners are generally devised by a team of senior staff at each school and are designed to take into consideration resource availability within the school and in the wider local authority area e.g.

laptop computers available on school premises, books available from the local library, items on display at a nearby museum, topic resource boxes curated by the education department stores. Topic planners describe what children will encounter and what is expected of them during the topic using the following terms: **over-arching experiences, outcomes, key skills, assessment criteria** and **strategies for effective learning**, drawn directly from the curriculum guidelines. A topic planner will also outline how the curricular subject areas e.g. maths and language will be addressed during the topic with short descriptions of the lessons, activities and tasks that will be undertaken, including the aforementioned group-based **structured activities**. The topic planners created for World War Two: The Scottish Home Front studied by **P7** and The Solar System topic studied by **P5** are outlined below.

World War Two: The Scottish Home Front Topic Planner (P7)

World War Two: The Scottish Home Front is a topic that many, if not the majority, of Scottish schoolchildren will have encountered before they leave primary school for their secondary school education. It pertains to the everyday experiences of people living in Scotland during the Second World War (1939-45) with reference to aspects such the jobs that people did, the availability and rationing of food and other supplies, evacuation of children from cities to the countryside and local aerial bombing raids. The topic begins with an introductory lesson on The Road To War and ends with a reflective lesson on The End of the War. The Glossary at the end of this thesis clarifies many of the terms related to the topic that might be unfamiliar to some readers.

On completion of the planned 8-10 weeks of topic work on the World War Two: The Home Front topic, the **P7** teacher who took part in this study expected children to have had **overarching experiences** of the topic that incorporated a number of elements. According to the topic planner they should have:

- *Developed their understanding of the history, heritage and culture of Scotland and gained an appreciation of their local and national heritage within the world.*
- *Broadened their understanding of the world by learning about human activities and achievements in the past and present.*
- *Explored and evaluated different types of sources and evidence.*
- *Learned how to locate, explore and link periods, people events.*
- *Established firm foundations for lifelong learning and for further specialized study and careers related either directly or indirectly to the topic.*

(Scottish Government, 2007)

There were a number of **key skills** that the curriculum said a teacher should expect children to have gained from studying the topic:

- *Observing, describing, recording, and comparing and contrasting in order to draw valid conclusions.*
- *Exploring and evaluating different types of sources and evidence.*
- *Developing their curiosity and problem solving skills and the capacity to take initiatives.*
- *Interacting with others and developing their sense of self.*
- *Planning and reviewing investigating strategies.*
- *Developing the capacity for critical thinking through accessing, analysing and using information from a wide variety of sources.*
- *Developing skills in participation in discussion and informed debate with an emphasis on developing reasons and justified points of view.*

(Scottish Government, 2007)

And these are the expected **experiences and outcomes** for the Home Front topic:

- I can use primary and secondary sources selectively to research events in the past.
- I can interpret historical evidence from a range of periods to help to build a picture of Scotland's heritage and my sense of chronology.
- I can investigate a Scottish historical theme to discover how past events or the actions of individuals or groups have shaped Scottish society.
- I can compare and contrast a society in the past with my own and contribute to a discussion of the similarities and differences.
- I can discuss why people and events from a particular time in the past were important, placing them within a historical sequence.

(Scottish Government, 2007)

In terms of **assessment criteria**, from the teacher's notes, the children would have been required to:

- *Complete a final summative assessment.*
- *Undertake investigations and present their thinking orally in writing or in multimedia format.*
- *Describe and record, explore and analyse resources.*
- *Interpret and display information.*
- *Talk and debate with peers and adults.*

And they would have been subject to (or involved in using) the following **strategies for effective learning**:

- *KWL grid*
- *Peer assessment*
- *Self-assessment*
- *Traffic lights*
- *2 stars and a wish*

Note that we encountered 'KWL', 'Traffic Lights' and '2 stars and a wish' in Chapter 3 Methodology and the child and teacher comments gathered via those assessments methods were collected for use in this study also.

The curricular guidelines above are accompanied by a series of lesson plans for the topic as well as a description of the activities that would take place during each lesson, along with learning intentions for each of these. The lessons planned for the World War Two: The Scottish Home Front topic for the **P7** class who took part in this study are summarised in the table below (Table 4.2). NB, in practice there were some slight variations in how this worked and this can be seen in the Research Diary in Appendix 1 and in comments I will make when reporting the findings in Chapter 5.

Lesson Name	Activity
1. Finding out about the past	Explore historical documents and objects in groups then discuss as a class.
2. KWL Grid	Complete the What I already know and What I would like to know sections of the grid.
3. Road to war	Put facts about the events that led to Britain declaring war in chronological order
4. Conscription	Group/class discussion of implications for everyday life of Britain going to war
5. Jobs on the Home Front	Discuss wartime jobs as a class. Research Home Front jobs in groups. (Poster Task)

6. Air Raid Precautions: Blackout	Recreate blackout conditions in class. Listen to siren recordings and view wartime photos.
7. Air Raid Precautions: Shelters	Trip to local museum where there is a replica Anderson shelter.
8. Air Raid Precautions: Gas Masks	Make gas masks (similar to one of the structured activities).
9. Evacuation	Watch DVD of Goodnight Mr Tom showing boy being evacuated. Discuss boy's feelings. Class write letters home as if they are evacuees.
10. Rationing	Discuss the reasons for rationing and how it affected everyday life. Compare then to now.
11. Rationing (continued)	Use box of items, discuss potential for re-use, recycling and allotment keeping.
12. Clydebank Blitz	Discuss reasons why Clydebank was targeted. Locate it on map. Compare pics of before vs. after.
13. The End of the War	Generate questions about the end of the war. Use historical sources. Present to the class.
14. Remembering the Past	Discuss the ways in which the class are reminded of WW2 and what "heritage" means.
15. Topic Review	Discuss: KWL What have I learned? Do you still have questions? What did you enjoy/not enjoy? What should be changed?

Table 4.2: Lessons on World War Two: The Scottish Home Front Topic

NB: It should be noted that 15 lessons did not equate to exactly 15 sessions. In practice this topic lasted for 22 sessions i.e. 11 weeks spread over 15 weeks due to school holidays in April and May and other interruptions.

(Note also that the children were scheduled to and did indeed complete the KWL grid in lesson 1 for reflection on their existing knowledge of the topic and their desires for future learning and again in lesson 15 to reflect on what they had learned and whether it had been an enjoyable or desired experience).

Structured Activities

Throughout the topic, there tended to be short information-oriented tasks happening in many or most lessons and while I will not focus on these in the

thesis, observing them gave me some insight into the information environment of the classroom. The richest information tasks and those that were ultimately investigated were those that were among the so-called **structured activities**. In our initial discussions, the teacher suggested that those tasks, situated within the class's topic time, might be of greatest interest and this is indeed why the topic work came to be my focus. We agreed that I would observe the class in its entirety during those lessons or parts of lessons on topic work that were directed by the teacher and observe groups more closely, as they performed their structured activities.

I thus began my research with the **P7** class knowing roughly, though not precisely, when in the school term these tasks would be undertaken and could do a certain amount of planning for them, though I still had to be flexible, as scheduling could change with a moment's notice due to e.g. school play rehearsals, teacher availability for example. I gave some thought to whether I should study tasks from more than one topic and therefore stayed with the **P7** class for a further 6 weeks beyond the end of the World War Two: The Home Front topic, sitting in on a few of their lessons on a science topic but could soon see from topic planner that there were few tasks that involved information-seeking activities and by this time I had enough evidence from the tasks already investigated to answer the research questions

The table below outlines all of the **structured activities** tasks encountered by **P7** on this topic. Those tasks that were investigated for this study are shaded in grey. A task on Posters was also highly structured and strongly focused around information seeking and is included here also, as is a homework task on the sub-topic of the Clydebank Blitz.

Task ID	Task name	Subject	Description
Poster	Poster Task	Language ICT	Create posters about wartime jobs following research.

ARP1	Finding out about ARP using books	Language ICT	Use books to find out about ARP.
ARP2	Making Gas Masks	Art Maths	Make gas masks using cardboard and cellophane after making head measurements.
ARP3	Gas Mask Labelling	Language	Label a diagram of a gas mask + put instructions for use in order.
ARP4	Finding out about ARP on computers	Language ICT	Research on computers about ARP
ARP5	Poster for ARP Wardens	Language Art	Read information sources and design a poster to advertise for job of ARP Warden.
ARP6	Report about Bomb Shelters	Language	Use information sources (pictures and text) about shelters to make notes for a report.
Rationing1	The System of Rationing	Language	Read and discuss an information source. Define instructions for ration book use.
Rationing2	Dig for Victory	Language Ecology Environment	Plant seeds + complete True / False exercise using information source about WW2 gardening.
Rationing3	Wartime Recipes	Maths Language Health/ Wellbeing	Read cookbook, list rationed items, write quantities to make cake, check rations sufficient.
Rationing4	Rationing	Language Maths	Read information source. Calculate allowance for each household in the group.
Rationing5	What Other Items Were Rationed?	Language	Use books to find out about non-food shortages and how people coped with them in WW2.

Rationing6	Find out about rationing on the BBC website	ICT	Complete interactive activities on BBC website. Make notes about what you found out.
Clydebank Blitz	Clydebank Blitz	Language ICT	Homework task. Research and write a report about the Clydebank Blitz.

Table 4.3: Tasks on World War Two: The Scottish Home Front

NB it is not possible to give the exact order in which these tasks were completed, as this was different for each group due to the “carousel” nature of the six ARP tasks and the six Rationing tasks. Here in the (written) words of one of the teachers is how a task carousel was supposed to work:

There are (number) structured activities which go with this topic. The class should be split into groups of (number) and should stay in these groups every week to do the activities. They should rotate around the activities so by the end all groups will have done all activities. The activities should take approx. 1 hour and ideally should be done once a week. The learning gained from these tasks should be linked to the rest of the topic.

As can perhaps be seen from the tables above, the topic World War Two: The Home Front was broken into several stages. The first phase dealt with *The Road to War* and moved on to *Air Raid Precautions* and then to *Rationing*. In the Air Raid Precautions stage and then again in the Rationing stage there were 6 **structured activities** for children to carry out. These tasks were done in groups of 4 or 5 children. Children remained in the same group for all tasks. The order of the tasks was in accordance with a carousel system described above. Each task took at least 1 session (around 1 hour) to complete. Groups would occasionally partly complete a task during one session, finish it during another and then move on to the next in the remaining time of that second session. A very similar dynamic operated for the Solar System topic undertaken by P5 and described later in this chapter. As well as the twelve structured activities from

the task carousels, all children in **P7** completed the Poster Task in session 3 of the topic and were assigned with and expected to complete the Clydebank Blitz task over a three week period midway through the topic.

Both the **P7** and **P5** classrooms were arranged in terms of 'stations' so that each task was done at a particular location. The children moved from their usual seat/table to sit wherever the task to which they were currently assigned was taking place. At each station was a plastic box containing the items pertinent to the task. Each box contained laminated task sheets that gave the **learning intention, instructions** and **guidelines** for the task as well as some or all of the resources required in order to complete it, for example books, scissors, glue. The children had a designated jotter (exercise book) that was to be used for any writing associated with each task. There was a lot of emphasis from the teacher on doing this neatly, and the children were often reminded to create a heading and date whenever they began a new task. In fact a great deal of time and effort was taken up in each lesson by this part of the task. Headings were created with a view to creating a table of contents on the front page of the jotter.

In terms of assessment, for the tasks, children were assessed according to a system of continuous assessment of a mixture of types. Devices such as: peer assessment, self-assessment and the 'Traffic Lights' system were employed following a number of tasks to encourage reflective learning. The teacher also regularly inspected the children's exercise books writing written scores, words of encouragement and notes of caution.

Why Tasks Were Chosen

At the beginning of this chapter I outlined how each of the chosen tasks related to the research questions that I was trying to answer. Answering the questions satisfactorily was of course the chief motivation for choosing particular tasks but there were also other more practical and often logistical considerations that motivated the choice. While there were other short information seeking tasks

carried out by the class throughout the topic I chose to focus on investigating the **structured activities** involving information seeking as they tended to involve several elements that made it more straightforward to structure my data collection and analysis and to understand what children were encountering in terms of expectations from the teacher and presentation of task descriptions. These elements were as follows:

- **A learning intention**
- **Task criteria**
- **Task required elements**
- **Task guidelines**
- **Task outcome (in the form of a physical artefact produced as a result of the information-seeking activity)**

In addition, the scheduling of these structured activities meant that they happened (mostly) in discrete sessions and were thus more predictable in terms of when and where they would be happening during the many weeks of topic work. Additionally, from a methodology point of view, the small group dynamic of the structured activities made it easier for observations to take place than was the case for whole class activities. The carousel nature of the structured activities meant also that it was possible to observe Group X doing task Y in week 1, for example then to observe another group doing the same task in week 2, another in week 3 etc.

In the next section I provide detailed descriptions of the tasks that were investigated for this study.

The Poster Task

This task was done in week 3 of the topic when children had already been involved in lessons on the Road to War and had completed the first two sections of the KWL grid. Unlike other tasks in this study, no written instructions were given for this task. The **success criteria** (term used by teacher) for the task were described verbally by the teacher, as follows:

- Be able to discuss jobs with other children
- Create a poster by first finding out about it
- Complete poster in two 45-60 min sessions
- Present poster as part of group towards the end of the second session

Each group has a different job to research and make a poster on:

- Air Raid Precautions
- Home Guard
- Munitions Workers
- Auxiliary Fire Service
- Billeting officers
- Women's Land Army

To be included on poster:

- Title
- Info about Job
- Equipment used in job
- Illustrations

Guidelines for poster:

- Include appropriate info*
- Include lots of info*
- Include enough info*

Acceptable ways to find out information for poster:

- Books*
- Library*
- Own knowledge*
- Each other*
- Objects around the class*
- Internet**
- Some printed materials provided by teacher including text and pictures/photos that can be copied or cut and pasted onto poster**

Each group should have the following roles within it:

- Reader
- Recorder
- Presenter
- Designer

*Suggestions generated by children and approved by teacher in class time before beginning task

**Teacher suggestions in class time before beginning task

Note that there were no written instructions given to children for this task in the form of a task sheet, for example, though the instructions and guidelines were written on the class whiteboard where the class could see them at all times. As can be seen from what the teacher referred to as the **success criteria**, the task was designed to be undertaken during two consecutive topic sessions, with the class split into six groups of 4-5 children to work on six different wartime jobs, the same groups in which they worked for the rest of the topic. This task was chosen to be part of the study because of the structured nature of its guidelines and instructions, the production of an artefact in the form of a poster and due to its likely utility in investigating **RQ1, RQ2 and RQ3** in particular, in relation to notions of success, support needed and choice of information channel respectively, and of course gender (**RQ5**).

Task ARP1

This task was part of the first set of carousel **structured activities** that were about Air Raid Precautions. The instructions for this task were on provided on a task sheet, a single sheet of A4, one per group and read as follows with this exact wording, layout and formatting.

Air Raid Precautions

Group Task 1

Today you are going to use the topic books to find out about the Air Raid Precautions people took during World War 2. You should make notes in your topic jotters under the following headings.

**APR (sic) Wardens and their role in enforcing Air Raid Precautions*

**The Blackout*

**Bomb Shelters*

**Gas Masks*

Remember you should not be copying out screeds from the book you are using. You should be making notes using the key words and information.

Please write the date in your jotter and the heading-

Notes on Air Raid Precautions before you begin.

Several non-fiction hardback books were provided along with the task sheet, though the children were tacitly also allowed to use any other book they could find around the classroom to answer the questions. This task was chosen to be part of the study because of the structured nature of the guidelines and instructions, the production of an artefact (of sorts) in the form of writing in the child's jotter and due to its likely utility in investigating **RQ1** on notions of success in particular with a contribution to understanding of preferred information channels (**RQ3**) and support needed to carry out tasks (**RQ2**) and also gender (**RQ5**).

Task ARP4

This task was part of the first set of carousel **structured activities** that were about Air Raid Precautions. The instructions for this task were on provided on a task sheet, a single sheet of A4, one per group and read as follows with this exact wording, layout and formatting.

Air raid Precautions

Group Task 4

Research on Computers

Work in pairs on the computers. You all need a worksheet which should be stuck in your jotter once completed.

When people during World War 2 had to use their air raid shelters they often took personal belongings in with them. Imagine you were a child during WW2-what would you take in with you??

Follow the instructions on the sheet. There is a little bit of research you must do. Think about whether a child in WW2 would have had a Wii or Nintendo to take in with them??? You also need to think about needs vs wants for this task.

Remember to make notes under those headings in your jotter. Write a heading and date.

If you complete the task quickly do some research on the computers and make notes about the following headings:

*The Blackout

*ARP Wardens

*Air Raid Shelters

*Gas Masks

Note that the first part of the task was designed to take only a very short time and that the second part, researching the headings is almost identical to the task in ARP1 with a few differences in terminology and order and in the information source, Internet-enabled laptop computers that were provided to each group.

Task Rationing6

This task was part of the second carousel of tasks that **P7** completed on the World War Two: The Home Front topic. Each group was given a task sheet for the task that appeared as follows with this exact layout, wording and formatting:

Station 6: Rationing

Learning Intention

Today we are using the BBC website to learn about rationing.

We will be successful if:

**we know how to use the website properly*

**we can make notes about rationing from the website*

**we can tell our partner new information we have learned from using the website.*

INSTRUCTIONS FOR STATION 6

- 1. You must read the learning intention and success criteria with your partner. Ensure everyone understands and discuss anything that is tricky. If in doubt ask a teacher to help.*
- 2. Find the website using this address:
<http://www.bbc.co.uk/history/forkids>
Click on Children of World War 2*
- 3. Use the website to do the activities with your partner.*
- 4. You may want to make some notes after doing this. Make sure you organise your information well using headings or questions.*

Children undertaking this task were provided with 2 laptops per group at the station where the task was carried out and no further materials beyond the printed task instruction sheet. This task was chosen to be part of the study because of the structured nature of the guidelines and instructions, the production of an artefact (of sorts) in the form of writing in the child's jotter and due to its likely utility in investigating **RQ1** on notions of success in particular

with a contribution to understanding of preferred information channels (RQ3) and support needed to carry out tasks (RQ2).

Clydebank Blitz Task

This task was a homework task that involved researching the topic of the Clydebank Blitz and writing a report about it. To provide some context for the benefit of readers of this thesis I have provided some background below about the events around which the task was centred. From the BBC website:

“On 13 and 14 March 1941, Clydebank was the target of one of the most intense Luftwaffe bombing raids of World War II. Each night, over 200 German bombers attacked, aiming to destroy naval, shipbuilding and munitions targets. Incendiary bombs were dropped, starting marker fires to assist further waves of bombing. Fires at Singer's timber yards, Yoker Distillery and Old Kilpatrick's oil depot resulted in the greatest damage to industry. Clydebank's housing bore the brunt of the raids. Of 12,000 homes, 4,000 were completely destroyed. Only seven properties were undamaged. The official death toll records 528 casualties. Many argue the figure should be far higher. After the war a complete redevelopment plan created new housing and facilities on the outskirts, allowing the heavily-damaged centre to be restructured”.

(BBC, 2018)

Note also that Clydebank is a town situated around 10 miles from the school in which this study took place and the aerial bombings or “Blitz” that happened there are arguably among the most notable events on the Scottish Home Front during the Second World War.

Children had six tasks/questions to complete/answer as part of their assignment. These originated in questions generated during class time and are listed below with the exact wording, spelling and punctuation used by the teacher when she wrote them on the classroom whiteboard.

- *Where is Clydebank (map?)*
- *What was the 'blitz'?*
- *What was Clydebank like before the blitz?*
- *What was Clydebank like after the blitz?*
- *When did the blitz happen?*
- *Why did the Germans choose Clydebank?*

Following a further class discussion, guidelines for the task emerged and the teacher again wrote these on the board by hand for the class to copy into their dedicated report jotters. Again, the guidelines are shown here with the exact layout, spelling and punctuation used by the teacher.

You are going to write a REPORT ABOUT the Clydebank Blitz. You should include:

- *Good information in your own words*
- *Pictures/maps/drawings/diagrams*
- *Headings and subheadings*

Remember:

- *Your writing must make sense*
- *Good presentation*
- *Punctuation*
- *At least 3 pages long*
- *Bring back on 23/04*

Once children had copied the task questions and guidelines into their dedicated jotters they would be told that they had around three weeks to complete the

report with the tacit understanding that it would be completed outside of school time. This three week period included five days where children would be at school during the day with access to all of the usual resources as well as sixteen days where the school was closed for the Easter break i.e. when they did not have access to the school building and classroom resources nor to help from teachers, peers and others in school.

This task was of particular interest for use in the study as it had definite guidelines and instructions, led to the production of an artefact in the form of the reports that were produced in relation to the task, which could be used in evaluation. The task offered the chance to study the home perspective particularly in regard to **RQ4**. Notions of success to fulfil the requirements of **RQ1** could also be studied as well as perspectives on information channel chosen (**RQ3**), support required (**RQ2**) and gender (**RQ5**).

Topic Planner P5 Solar System

In a very similar manner to the topic planner for P7, P5's The Solar System topic had its own topic planner.

The topic planner for **The Solar System drew** outlined the following **over-arching experiences** that children were expected to have while studying the topic:

- *Develop a curiosity and understanding of the environment and my place in the living, material and physical world*
- *Demonstrate a secure knowledge and understanding of the big ideas and concepts of the sciences*
- *Develop skills for learning, life and work*
- *Recognise the impact of sciences make on my life the lives of others the environment and on society*
- *Recognise the role of creativity and inventiveness in the development of the sciences*
- *Develop as a scientifically literate citizen with a lifelong interest in the sciences*
- *Establish the foundation for more advanced learning in the sciences and the technologies*

As well as outlining the **Key Skills** that children should gain:

- *Developing scientific values and respect for living things and the environment*
- *Assessing risk and benefit of science applications*
- *Developing self-awareness through reflecting on the impact, significance and cultural importance of science and its applications to society*

The topic planner also described the following **Assessment Criteria**:

- *Traffic lighting*
- *Two stars and a wish*
- *Peer and self assessment*
- *On-going class assessment*

And the following **Effective Learning Strategies:**

- *KWL activities*
- *Share learning intentions and success criteria*
- *Active learning strategies-think, pair, share, picture frame, carousel*
- *Collaborative group work*
- *Demonstrating learning-PowerPoint presentations and games*

Accompanying the guidelines above were a series of lesson plans. These are summarised in brief in the table below (Table 4.4).

Lesson name	Activity
1. Finding out current knowledge	Group/class discussion in KWL format to find out What I already know and What I would like to know .
2. Introduction to the Solar System	Understand the elements of the solar system via class smart board activity.
3. Acting out the Solar System	Understand planetary motion by taking on role of planets by moving around the yard.

4. Researching the properties of planets	Find out about planets in groups from information sheets around the room.
5a Making the Solar System Pt 1	Make papier mâché planets and assemble them as a model solar system.
5b Making the Solar System Pt 2	Find out about how a planet looks using classroom resources. Painting a picture of it.
5c Making the Solar System Pt 3	Add to solar system model with appropriate measurements: Saturn's rings, planet labels.
6. Day and night and time zones	Use a globe to understand rotation of earth, time periods and position of sun.
7. The moon	Use torches to explore earth, moon moving around the sun and phases of the moon.
8. Constellations and painting	Discuss ancient beliefs about constellations, identifying and painting constellations.
9. The sun as a source of heat	Do an experiment with water to show that heat comes from the sun.
10. Optional Enterprise Project	Design a game based on the solar system for another class.
11. Plenary	Discuss KWL questions from lesson 1. Answer What have I learned . Explore gaps.

Table 4.4: Lessons on The Solar System Topic

The table below (Table 4.5) shows the tasks that were undertaken by children doing the Solar System topic. Highlighted are those tasks that were investigated in the study described in this thesis.

Task ID	Task name	Subject	Description
Astro1	Creating a PowerPoint	ICT Language	Creating a PowerPoint on the solar system using computer and topic books.
Astro2	Designing spacesuits	Art	Designing spacesuit by drawing.
Astro3	Making sundials	Maths	Constructing sundials using compass, card templates, Sellotape.
Astro4	Create a planet of your own	Art	Designing a planet by drawing and labelling a picture of it.
Astro5	Make a spaceship or satellite	Art	Sculpture: making a spaceship or satellite from junk materials.
Astro6	Listening to and creating planet music	Music	Listening to and matching Holst's pieces to the right planet. Recording own piece.
Astro7	Researching famous astronauts	Language ICT	Creating a fact file about a famous astronaut using information from the web, books and printed materials.

Table 4.5: Tasks on P5 Solar System Topic

Task Astro7

A description of the **Astro7** task follows. Each group would be given a task sheet, one per group, with the following information about the task and the elements they had to cover.

- *Do this fact file in your jotter*.*
- *You should decide what the title should be and how you want to set it out.*
- *You should also draw a picture of the astronaut and colour it in if you have time.*
- *Remember to write the small date and use your best writing.*

On the same sheet, the groups would see the following written guidelines:

- *Task: You have to create a fact file about a famous astronaut.*
- *Choose one of the astronauts you have been given information about and create a fact file about them.*
- *Try to include information about their: Name, Date of birth, Date of death: (if they have died), Place of birth/Place they are from, Achievements: (what did they do which makes them a famous astronaut), Other information: (any other information which you think is interesting).*

As well as the task sheet, each group would be given the same set of five printed sheets headlined “Quick Facts”, each one featuring some short information statements about a different famous astronaut. Each group would have access to 3 laptop computers, a selection of topic books and would be free to use any of the other topic resources around the classroom. The task was to be undertaken

in a period of around 60 minutes per group. As groups worked on this task, the other five groups would be engaged in one of the other activities in the task carousel, the same dynamic that operated for the task carousels used in **P7** as previously seen.

Astro7 “Researching Famous Astronauts” was chosen to be part of this study as it fitted several criteria: it involved information seeking, was classroom-based and, unlike most of the other tasks done by **P5**, it involved an element of information seeking and led to the production of an artefact, a paper fact file about an astronaut. **Astro1** was another contender for investigation given its element of information seeking and the production of a digital artefact, however given that only one artefact would be produced per group rather than per child as in the case of the **Astro7** task it was decided that the latter task would be the source of the richest data on information seeking and use in this particular topic. In any case, the **Astro7** task shared many similarities with the **Poster Task** already observed for **P7** in terms of its level of complexity, requirements, mode of discovery and the artefact produced so it made sense to investigate a similar task with this younger group in order to answer the research question about success (**RQ1**) but also to address the ones about age in particular (**RQ2**) (**RQ3**) and also gender (**RQ5**). Discussion with the class teachers revealed agreement that the two tasks, **Poster Task** and **Astro7** were similar in terms of their complexity and were thus well suited for making a comparison between the age groups.

Leisure Tasks

While I already had one means of investigating the influence of context or situation as per **RQ4** via my inclusion of the **Clydebank Blitz** homework task, I felt motivated to find out more about the out-of-school information-seeking context than exploration of that task alone would provide. This was investigated via a survey and focus groups, with no associated formal task instructions or guidelines. Thus, while this part of the study had been designed to be of

particular utility in answering **RQ4** on context and situation, it was likely to make a contribution also to **RQ1** on success in information seeking, elements of **RQ2** on support required in information seeking, **RQ3** on information channel preference and on **RQ5** on gender. This investigation was carried out with **P7** only thus the contributions to **RQ2** and **RQ3** are particularly limited.

Overview of Evaluated Tasks

The table below (Table 4.6) provides an overview of the tasks chosen with details of which class performed it, whether it was a group or individual task, where it was done, how it was assessed, its duration and what was produced:

Task/Description	Class	Group/Individual	Where	Marking	No. of sessions	Artefact produced
Poster	P7	group	in class	group	2	poster
ARP1/ARP4	P7	group	In class	individual	1	notes
Rationing6	P7	group	in class	individual	1	notes
Clydebank Blitz	P7	individual	unknown	individual	3 weeks	report
Astro7	P5	both	in class	individual	1	fact file
Leisure	P7	individual	unknown	n/a	n/a	n/a

Table 4.6: Tasks Overview

Tasks and the Methods Used to Investigate Them

In this section I outline which methods were used with which tasks and how this worked in practice. The table below (Table 4.7) provides an overview of all of the tasks and the methods used with each one.

Task / Method	Class Observation	Group observation	Post-task exercise (traffic light)	Pre-task questionnaire	Post-task questionnaire	Artefact analysis	Focus Groups	Survey	Teacher written comments	Teacher interview(s)	Pre/Post-topic exercise (KWL grid)**	(Task description)	(Task rules)	(Diagram of environment)

Poster	Y	Y	Y	-	-	Y	Y	-	-	Y	Y	Y*	Y*	Y
ARP1/ARP4	-	Y	-	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	Y
Rationing6	-	Y	-	Y	Y	Y	Y	-	Y	Y	Y	Y	Y	Y
Clydebank Blitz	Y	-	-	-	-	Y	Y	-	Y	Y	Y	Y*	Y*	-
Astro7	Y	Y	Y	Y	Y	Y	Y	-	Y	-	-	Y	Y	Y
Leisure	-	-	-	-	-	-	Y	Y	-	-	n/a	n/a	n/a	-

*the description and guidelines for this task were negotiated with the children and then written on the classroom whiteboard by the teacher. All other task descriptions were printed on task sheets that children had access to as they completed the task.

**is a method that was employed over the topic as a whole rather than applied to a specific task, though all of the tasks in the topic might be considered to be encompassed potentially by the feedback given.

Table 4.7: Tasks and Methods

Those methods or tools marked with shading are those over which the researcher had no control or input. These were either designed by the teacher or were a product of the tasks, such as in the case of the artefacts. All other methods were designed and administered by the researcher.

A quick reminder below of which research questions are particularly related to which tasks is in the table below (Table 4.8):

RQ vs Task	Poster	ARP1/ARP4	Rationing6	Astro7	Clydebank Blitz	Leisure
RQ1 How do children define success in information seeking and how does this differ from adult perceptions of success?	Y	Y	Y	Y	Y	-
RQ2 How does a child's age influence the amount of support that is required from others in order to complete a task?	Y	-	-	Y	-	-
RQ3 How does a child's age influence the information channel chosen to complete information tasks?	Y	-	-	Y	-	-
RQ4 How does the context or situation influence child information seeking behaviour?	-	-	-	-	Y	Y
RQ5 What influence, if any, does gender have on children's information seeking behaviour in respect of each of the elements mentioned RQ1-RQ4.	Y	Y	Y	Y	Y	Y

Table 4.8: How the Research Questions Relate To Each Task

And an overview of which of the research methods outlined in Chapter 3 Methodology were of particular utility for collecting data related to the answering of each research question is presented in the table below (Table 4.9).

RQ vs. Method	Observations	Artefact analysis	KWL grid	Teacher written comments	Teacher interview	Focus groups using artefact	Survey	Pre and post-task questionnaires
RQ1 How do children define success in information seeking and how does this differ from adult perceptions of success?	Y	-	Y	Y	Y	Y	-	Y
RQ2 How does a child's age influence the amount of support that is required from others in order to complete a task?	Y	-	-	-	-	Y	-	Y
RQ3 How does a child's age influence the information channel chosen to complete information tasks?	Y	-	-	-	-	Y	-	Y
RQ4 How does the context or situation influence child information seeking behaviour?	-	Y	Y	Y	Y	Y	Y	Y
RQ5 What influence, if any, does gender have on children's information seeking behaviour in respect of each of the elements mentioned RQ1-RQ4.	Y	Y	Y	Y	Y	Y	Y	Y

Table 4.9: Methods Used to Investigate Each Research Question

Poster Task Evaluation

The **Poster Task** was evaluated using the following methods in approximately this order. There may have been some slight overlaps between some of the activities:

- **Observation (group and class)**
- **Traffic Light analysis**
- **Artefact Analysis**
- **Focus Groups using Artefacts**
- **Teacher Interviews**

I also had access to the **Task Description, Task Rules** for the task and was able to make a Diagram of the **Task Environment**.

The methods were employed in the following way. Much as I had done in earlier sessions I carried out a **class observation** of the children's interactions with the teacher at the start of each of the two sessions of this task. I made handwritten notes of these observations. Of particular interest in the first session of the task was the manner in which the teacher outlined the task to the children and I was keen to capture as much of the detail of what was said as possible. The observation also allowed me to capture the wording of the task as the teacher wrote it on the class whiteboard. In the second session, I carried out some further **class observation** at the beginning of the session to capture the recapping information that the teacher gave and any additional or new instructions that she gave them. Also in session 2, I carried out further **class observation** during the presentations that children gave to the class following completion of their posters. As a group, they had to explain what their poster was about and the class was allowed to ask them questions. I observed the teacher's interactions with the groups during these presentations and noted the questions and reactions of the other children. Returning to session one, following the introduction and outlining of the task by the teacher, I chose to

follow one group (Group 3) as they carried out the task, carrying out a **group observation** but not otherwise taking part in the activity. I made discreet handwritten notes as I sat with the group and while I mostly focused on the activity taking place within the group, I also noted down anything that I thought might be of significance that I saw or heard happening elsewhere in the room, so in a sense **group observation** and **class observation** were happening at the same time.

Immediately following each session, I recorded an audio file of my thoughts about my observations. These were transcribed and collected in a research diary along with the handwritten notes. At the close of the second session of the task, children completed a **traffic light evaluation** based on their experiences. This is a technique that they were used to using to reflect upon and evaluate their performance. As well as providing data about the children's thoughts about the task, the questions asked on the traffic light evaluation sheet also provided an insight into the teacher's expectations of the activity. Photocopies were made of the completed evaluations and these were analysed. I then made photographic images of the posters to use in **artefact analysis**, as it was not appropriate to retain the originals. The original posters or **artefacts** were available for use during **focus groups** that took place a few weeks after the task had been completed. Six of these groups were held, one with each topic group. Each lasted around 30 minutes, and was audio recorded and transcribed. **Focus groups using artefacts** were conducted one group at a time with the group seated around a table in a quiet corner outside the classroom. There were few interruptions. Meanwhile the other groups continued with other class activities within the classroom. Children were made aware that they were being recorded and they were encouraged to speak clearly and to speak one at a time if possible. With the poster **artefact** positioned in the centre of the table I asked the children to show it to me and to explain what they had included in it, pointing to specific elements, textual and pictorial, to ask what each was about, why it had been chosen and where it had come from. In this way I used features of the posters as a way into interviewing the children and to understanding

their experience of carrying out the task: what they had understood, misunderstood, liked or disliked about the task and how they thought they had interacted with others in order to complete it. Shortly after the focus groups had taken place, a **teacher interview** was organized to find out about her experiences of the topic. The **Poster Task** was specifically asked about and discussed in detail. In a further interview with the teacher near the end of the topic, the poster task was again part of the discussion.

ARP1, ARP4 and Rationing6 Evaluations

ARP1, ARP4 and **Rationing6** tasks were evaluated using the following research tools. The tools were deployed in approximately this order, though there may have been slight overlap of a few of the evaluation activities:

- **Pre-task questionnaire**
- **Observation (group)**
- **Post-task questionnaire**
- **Artefacts analysis**
- **Teacher written comments**
- **Focus groups using artefacts (NB ARP1, ARP4 and Rationing6 were evaluated in the same focus group sessions).**
- **Teacher Interview**

I also had access to the **Task Descriptions, Task Rules** and was able to make a Diagram of the **Task Environment**.

In the session where children were scheduled to carry out each task, just before commencing the task and after they had read the task sheet, the groups were verbally asked questions from the **pre-task questionnaire**. Answers were recorded by the researcher using pen and paper. Immediately after this, the group under evaluation were subject to a **group observation** as they carried out their task. Handwritten notes were made of these observations. Once

children had finished carrying out the task, they were verbally asked the **post-task questionnaire** questions and again the answers were recorded as handwritten notes by the researcher. Soon after the task had been completed, the researcher made an audio file on her phone, recording her key observations. These were transcribed and added to a research diary (an annotated version is available to view in the Appendices) along with the handwritten notes. Once all six of the groups had completed the task (generally after several weeks had passed) the relevant parts of their topic jotters were photocopied and the contents relating to these two tasks as well as the **teacher comments** that had been added to each were subject to **artefact analysis**. Towards the end of the topic (and once both **ARP1**, **ARP4** and **Rationing6** had been completed by all 6 groups), **focus groups using artefacts** were organised with all 6 topic groups, each focus group lasting between 15 and 30 minutes. Pupils were asked to bring along an **artefact** in the form of their topic jotter (where they had completed the written elements of the tasks) to the focus groups in order to use them as a prompt for discussion in a similar way to that already described for the **Poster Task**. **ARP1**, **ARP4** and **Rationing6** tasks were discussed at each focus group. At two points during the study, there was a **teacher interview** where questions were asked in relation to both of these tasks.

Astro7 Evaluation

Task **Astro7** was evaluated using the following methods:

- **Observation (class and group)**
- **Pre-task questionnaire**
- **Post-task questionnaire**
- **Self-assessment sheet analysis**
- **Traffic light evaluation**
- **Teacher written comments**
- **Artefact analysis**
- **Focus groups using artefacts**

I also had access to the **Task Description** and **Task Rules** and was able to make a Diagram of the **Task Environment**.

A **class observation** was carried out in the session where the topic of the Solar System was introduced and handwritten notes were taken about what the teacher said about each of the tasks. Particular attention was paid to what was said about **Astro7** to understand better the teacher's expectations of the task and to capture any informal instructions that she gave to the class about it or any emphasis that she placed on particular aspects. Working with one group at a time, after they had read the task sheet for **Astro7**, a **pre-task questionnaire** was employed with each group (Appendix 3) that consisted of questions to find out whether they thought the task would be difficult and about what they thought they knew already about the topic. The questionnaire questions were read out to the group and the researcher made handwritten notes of their answers. **Group observations** were made of each group as they carried out their task with all six groups being observed over the course of several weeks. Handwritten notes were made of the observations. Immediately following the completion of the task, children were verbally asked questions from the **post-task questionnaire** and the answers recorded with pen and paper. An audio file of observations was created following each session, transcribed and added to a research diary, viewable in the Appendices. An inspection of **self-assessment sheets** in which children gave a written account of their feelings about how well they had done the task was made. Photocopies were made of these. An inspection of the **traffic light evaluation** part of each child's self-assessment sheet was made and the **teacher written comments** on the **self-assessment sheet** were examined: with a "star" for positive comments and a "wish" for improvements to be made. The fact files produced were photocopied as it was not appropriate to retain the originals and an **artefact analysis** was conducted to examine the contents. A **focus group using artefacts** was held with each of the six groups (in a very similar manner to that described for the Poster Task earlier in this chapter) with children being encouraged to bring

along the originals of their fact files and to discuss these and their experience of the task. An interview schedule for the focus groups is at Appendix 7. (NB It was not possible to examine the KWL process with any real detail for the P5 class as the 3 stages of the KWL grid had been completed as a class in the first and last sessions of the topic rather than individually as was the case for P7).

Clydebank Blitz Evaluation

The **Clydebank Blitz** task was evaluated using the following methods:

- **Observation (class-as the teacher outlined the task only)**
- **Artefact analysis**
- **Teacher written comments**
- **Focus Groups using artefacts**
- **Teacher interview**

I also had access to the **Task Description** and **Task Rules** for this task.

In the session where the **P7** teacher assigned this homework task, I conducted a **class observation** to capture exactly how the task was introduced to the children and to record their initial reactions and questions they asked. I made handwritten notes and recorded an audio file with further observations following the session. The audio file was transcribed and added to a research diary (viewable in the Appendices) along with the handwritten notes. Once the homework reports had been submitted and the teacher had completed her assessments, I obtained a sample of eight reports (4f, 4m) and conducted an **artefact analysis** to see how each had been completed and how well it met the task requirements and guidelines. Having this access also let me see the **teacher written comments** (using the two stars and a wish system) against each child's work. Two weeks following task completion, two **focus groups using artefacts** were held with the children (4f, 4m) whose reports had been obtained. These took place during usual topic time with a short break in between. The children

had already participated in at least one other focus group (**Poster Task**) and so would have been used to the format. **Focus groups using artefacts** took place in a room close to the usual classroom, behind closed doors with little background noise or interruptions. Participants were chosen to represent a spread of ability and personality, with the teacher's advice helping to form groups that would be representative, and highly participatory. Care was taken to include a child from each topic group (in practice 5/6 groups were represented due to availability issues). There was never more than one child from a topic group in a session. All participants had submitted reports for assessment. Those who had not submitted a report for assessment were not included on advice from the teacher. Children were asked to bring along the reports (**artefacts**) so that these could be used as prompts for discussion much in the way they had been for the **Poster Task focus groups**. Audio recordings were made (duration: 30m (m) and 30m (f) approximately).

Leisure Task Evaluation

The **Leisure Task** was investigated using the following methods:

- **Survey**
- **Focus groups**

The **survey** (Appendix 4) is described in full in Chapter 3 Methodology and was deployed with **P7** in the final few weeks of the study. The aim of the **focus groups** was to supplement the data gathered in the survey on leisure information-seeking preferences and to allow the researcher to check the validity of the questions asked and to explore further some of the themes that emerged from the survey. The **focus groups** would allow children the opportunity to give more reflective answers about the topic than the survey perhaps allowed and would allow children to talk about what they thought was important rather than being confined by the guidelines that were necessary in designing the **survey**. The **focus groups** might also draw out richer comments

from children who were less confident about expressing themselves in writing. An interview schedule for the **focus groups** may be seen at Appendix 9. Both **focus groups** took place in the week after the children had completed the survey. Children came to the sessions empty handed and were not required to create or interact with any written or other materials during the focus group sessions. This detail aside, the sessions were run in a way that is almost identical to the description of the **focus group** described for the **Clydebank Blitz** task.

Time Spent With Classes

24 weeks were spent with **P7** comprising 2 topics and approximately 100 hours of topic time plus a day away from the classroom on a school trip. 11 weeks were spent with **P5** comprising one topic and approximately 44 hours of topic time. 4 weeks were spent with **P4** comprising approximately 16 hours of observation. This amounts to a total of 160 hours of contact time with children, and, excluding school holidays this amounted to 4-8 hours per week spent with classes. In addition I tended to arrive early at school in order to prep and was often there for meetings and discussions with the teachers and other staff so the total amount of time spent in school is probably closer to 200 hours. It should be noted that this study took place in the period January to June, which is the second half of the school year, therefore children in each class would have known each other quite well by this point. While June was a quiet time in the school year and was therefore very suited to research activities such as focus groups, there were challenges in the shape of the numerous public holidays and school in-service days (when children are not in school but teachers and other staff work on lesson prep and other training activities) that occur in April and May in particular, amounting to approximately 16 days of holiday that often coincided with potential research time.

Choosing a School

Obtaining permission to work with children for research purposes can be difficult for numerous reasons not least due to concerns about child safety and fears about exploitation so researchers need to ensure that they build up good relationships with schools to ensure that staff, parents and pupils' needs and concerns are being addressed. In the case of this study the researcher, after exploring a few avenues of possibility and some false starts, was approached by a university colleague who was a member of the parent council at a local primary school with the suggestion that the school might be a suitable venue for the research. This colleague/parent acted as “gatekeeper” as per Pickard (Pickard, 2007). The school was offered a reward for taking part: a sticker printer plus the paper supplies required for it and the researcher volunteered to assist with activities such as school trips where parental and other volunteer support was necessary but often difficult to acquire.

Before the study could commence, a document was prepared for the ethics committee of the Department of Computer and Information Sciences at the University of Strathclyde that outlined the aims of the study, the data collection methods that would be used and the procedures for the storage and disposal of the data collected. Additionally, following initial discussions by telephone and in person about the feasibility and scope of such a study with a senior teacher at the school and an email to the head teacher, permission was sought from the education department under whose authority the school operates. This involved the completion of a form outlining the aims of the study, the data collection methods that would be employed and the signatures of a supervisor and head of department. Further, following permission being granted by the local authority, letters were sent home to parents of children at the school to let them know the aims and scope of the study and to ask them to consent to their child or children being involved in the study. These letters went to 4 different classes in the school as it was not yet established which year groups would be worked with. I also had to complete a full Disclosure Scotland check to ascertain my suitability

for working with children (PVG, 2018). Letters and forms can be seen in Appendices 12-14.

School Context

In many respects the school chosen was typical of a Scottish state primary school. The school was of average size for Scotland, with a roll of around 280 pupils. There were 11 classes of 18-33 pupils, 33 being the maximum permitted. The school was run by the local authority's education department and had a headteacher, deputy headteacher, several senior teachers and six further full-time and part-time qualified teachers. There were several classroom assistants who helped with tasks such as listening to reading, preparing worksheets and providing assistance to children who needed additional help with their learning. During the course of this study the classroom assistant's only involvement was during the two sessions that occurred outside school time: the library visit and the museum visit. The school had visits several times each week from a physical education teacher and a teacher of children with additional learning needs. There was no school librarian, which is not unusual in a Scottish primary school of this size.

Where the school differed from the average Scottish school was in its relatively high number of children from minority ethnic backgrounds, chiefly south Asian, comprising a mixture of second, third and fourth generation new Scots. Around 20% of the children spoke English as an additional language, which is relatively high for Scotland where the rate is 6% (Children in Scotland, 2018) but is close to the wider UK rate where the average is 15% (British Council, 2018) and not atypical for an UK inner city school. A language specialist visited for a few hours per week to assist those children who had English as an additional language, chiefly those in the younger years. The area surrounding the school has some pockets of high deprivation, with some streets being in the lowest 20% of the Scottish Index of Multiple Deprivation (Scottish Government, 2011) but there is also a significant pupil population drawn from more affluent areas nearby, in

the top 20% of postcodes in Scotland. In the interests of preserving pupil, teacher and parents anonymity I will detail nothing further about the school demographics here.

In terms of accommodation in the school, space was at a premium. At the time of the study, all eleven classrooms were in use. In addition, the open area between the classrooms was almost continually occupied by children undertaking artwork and other activities. There had been a school library that was housed in its own room but due to the pressure on space, the collection was now resident on closed shelves in the open area, which made it physically difficult to access still less notice that it was there. Year groups spent much of their time in their allotted classroom for much of the school week and children had their own dedicated desk and tray for their belongings there. Children received the vast majority of their lessons from one dedicated teacher, though groups of children and individual pupils would go to other rooms for certain lessons e.g. if they required additional assistance or had a particular aptitude for a subject, they might be taught by a teacher who had a specialisation in that area. This was particularly the case for the core subjects such as maths and language. Topic work and the topic time during which it was delivered was however, consistently taught by the class teachers.

Each classroom in the school was equipped with an electronic smart board and two desktop computers, the latter in line with government legislation (Scottish Government, 1998). There was a small pool of laptops that could be borrowed to supplement the classroom technology. There was no dedicated ICT suite in the school as there often might be in schools larger in size/roll than this one, however there were four desktop computers available in the open area that could be used by any of the classes. Additionally, there was a set of twenty laptop computers in a mobile docking station that was reserved for use by children in primaries 1-4. Older children did not have access to this equipment. There was a large portable television set, DVD player, digital camera and mobile photographic printer, though at the time of the study, the camera lead was

missing so its usage was limited. Printing was highly restricted and was only possible in the open area, and not in any of the classrooms.

Officially, the Internet was available in every classroom and throughout the wider school and all school laptops could connect to the school's wireless network, however the network was not particularly reliable. The Internet was subject to filtering in accordance with education department rules so social and multimedia sites such as Facebook, YouTube and Spotify were strictly off limits. The school had its own website, built by parents and regularly updated with information and photographs. There was a small amount of curricular information on the website that outlined the subject areas that pupils would be studying and the expectations for these but much of this type of information was delivered to parents by letter. In addition, some communication with parents occurred by email, telephone and text messaging. In common with most schools in the local authority area at the time, the school did not have access to Glow the Scottish education intranet (Education Scotland, 2018). Glow had the purpose of allowing children and teachers to interact electronically and to make use of the extensive educationally resources available there but was not available to the participants in this study.

Participants

For the purposes of this study, the researcher spent time with 3 different classes. The class with whom the most time was spent (approximately 100 hours over 24 weeks) was **P7**, the eldest children in the school who are typically 11-12 years of age. A substantial amount of time (approximately 44 hours over 12 weeks) was also spent with **P5** who are aged around 9-10. Working with children in each of these age groups allowed me to target my research at children who are at either end of the concrete operational stage and therefore to make comparisons between children's information behaviour at these two transitional points: in the case of **P5**, as they moved into the concrete operational stage and in the case of **P7** just as they began to leave it for

adolescence. A smaller amount of time (approximately 16 hours over 4 weeks) was spent with **P4** who are aged around 8-9 years of age. Ultimately the study with **P4** was abandoned to prioritise the work with **P7** and **P5** because so little in their curriculum was focused on information seeking. It was informative however to attend their information technology lessons and understand more about the types of training younger children in this school received in this regard and to see what they found interesting, difficult or enjoyable in the tasks that they undertook.

The **P7** class who took part consisted of 29 pupils, 14 girls and 15 boys and were aged 11-12 years old. All spoke fluent English. All of the children in **P7** consented to taking part in the study and their parents gave permission for them to be involved in all aspects including being photographed and audio recorded, with the exception of one girl who was given permission to take part but was not to be photographed. This class, for the purpose of the topic were arranged in six groups of 4-5 pupils, A-F as follows:

Group	1	2	3	4	5	6
ChildID	Group1Girl1	Group2Girl1	Group3Girl1	Group4Girl1	Group5Girl1	Group6Girl1
	Group1Girl2	Group2Girl2	Group3Girl2	Group4Girl2	Group5Girl2	Group6Girl2
	Group1Boy1	Group2Girl3	Group3Girl3	Group4Boy1	Group5Boy1	Group6Boy1
	Group1Boy2	Group2Boy1	Group3Boy1	Group4Boy2	Group5Boy2	Group6Boy2
	Group1Boy3	Group2Boy2	Group3Boy2	Group4Boy3	Group5Boy3	

Table 4.10: P7 Participants and Groupings

To maintain anonymity, the children in this class will be referred to by these identifiers throughout the thesis, with the first part of the identifier referring to the group in which the child worked for the topic work, the middle part indicating gender. Pupils stayed in these groups throughout the topic with the exception of Group2Boy1 whose behaviour class with another child in Group 2 led to him being moved to another group part way through the topic. He will be referred to as Group2Boy1 wherever he appears in the data but clarification will

be given as to which group he was working with or reporting from whenever he is mentioned in this thesis.

The **P5** class who took part consisted of 22 pupils, 13 girls and 9 boys who were aged 8-9 years old. All spoke fluent English. There were a couple of children in **P5** who were the younger brothers and sisters of children in **P7** with whom I had already worked and this was in some ways a useful ice breaker with this class when I first came to work with them as some knew me (or knew of me) via that route. All but one of the children in this class consented to take part and their parents gave permission for their children to be involved in all aspects of the study including being photographed or audio recorded. This group, for the purpose of the topic were arranged in six groups of 3-4 pupils, labelled A-F as follows:

Group	A	B	C	D	E	F
ChildID	GroupAGirl1	GroupBGirl1	GroupCGirl1	GroupDGirl1	GroupEGirl1	GroupFGirl1
	GroupABoy1	GroupBGirl2	GroupCBoy1	GroupDGirl2	GroupEGirl2	GroupFGirl2
	GroupABoy2	GroupBGirl3		GroupDGirl3	GroupEBoy1	GroupFBoy1
		GroupBBoy1		GroupDBoy1	GroupEBoy2	GroupFBoy2

Table 4.11: P5 Participants and Groupings

To maintain anonymity, the children in this class will be referred to by these identifiers throughout the thesis, with the first part of the identifier referring to the group in which the child worked for the topic work, the middle part indicating gender. Note that a third member of Group C, did not consent to take part in the study and therefore is not listed here nor does any data related to her appear in this thesis. Pupils stayed in these groups throughout the topic.

The **P4** class who took part consisted of 20 children aged 8-9 years old again with a few children in the class who were younger brothers and sisters of children with whom I had already worked. Little of the data that was collected with this group of children has been used in this thesis barring the occasional general observation so no further detail of this cohort will be provided.

School Staff

There were three teachers involved in the study. All were fully qualified and had between 10 and 20 years post qualifying experience. The teacher in the **P7** class was a senior teacher and had duties outside of the classroom supervising other staff and developing curriculum alongside other senior staff. The headteacher in the school was involved in the study by helping to negotiate the parameters of the study with the teachers, local authority and parents and advised which classes, teachers and curricular aspects might be best to work with during the time period of the study. The teaching assistants in the school were not directly involved in the study as they were rarely in the classroom during topic time, though they did accompany the **P7** class when they made their library and museum visits and their interactions in those situations would be noted in the observation notes for those visits. Other staff members in the school were involved in the study in minor ways such as teachers who occasionally covered classes during the carousel sessions if the usual class teacher had to be elsewhere. This was the case, for example, in the session where a survey for the study was deployed to **P7**. Another key member of staff was the school receptionist who helped to facilitate easy entry to and from the school secure doors and co-ordinated the sending and receipt of the permission letters from parents.

Parents as stakeholders were not fully investigated due to the perceived challenges of organising such involvement. In any case, the decision to also investigate home information seeking was only taken fairly late into the study and this increased the challenge of organising such research activities. The aforementioned language diversity in the school had the potential to make the organisation of such activities a challenge. Other challenges came in the form of one teacher (**P7**) leaving the school for one in another region 50 miles distant at the end of the school term and another (**P5**) leaving for maternity leave at the same time so the potential making follow up visits to the school for further

interviewing or confirmation of results was very weak and is arguably a limitation of the study, as is the similar lack of access to the **P7** group following the end of the study period-they had not only left for the summer holidays but also for their move to secondary school.

Chapter Summary

The chapter's contribution is in its description of a study setup for an ethnographic study of children's information seeking behaviour in a state school in Scotland by describing how real existing classroom-based tasks were chosen for inclusion in the study and how research methods and tools that relied heavily on the work that children produced and on the evaluation tools that they were used to using with the teacher were exploited in order to answer the five research questions. The place of these tasks within the context of the schoolwork of two classes - **P7** and **P5** - was outlined along with explanation of how these tasks are framed by Scotland's national curriculum. A detailed description of the manner in which the methods described in Chapter 3 Methodology were used to investigate the chosen tasks is provided with reference to how each data collection method, in tandem with analysis using certain factors was applied in order to answer particular research questions from those five outlined in Chapter 5 Findings I. The school and its community were profiled, accompanied by the reasoning for the school and the classes who took part having been chosen to situate the study and a discussion of the necessary ethical considerations and formalities that had to be negotiated before any research could begin. The study participants were introduced along with a description of the nature and duration of my involvement with each class. In the next chapter, **Chapter 5 Findings I**, I present the findings of my evaluation of the **Poster Task, Astro7, ARP1, ARP4** and **Rationing6**.

Chapter 5 Findings I: Classroom Tasks

Introduction

This chapter reports on the findings resulting from the investigation of five formal classroom-based tasks. Section 1 reports the findings of the **Poster Task** carried out by **P7**. Section 2 reports on the **Astro7** task carried out by **P5**. Section 3 reports the findings of tasks **ARP1** and **ARP4** carried out by **P7** and Section 4 reports on the **Rationing6** task carried out by **P7**. Section 5 reports on the KWL grid evaluation undertaken by **P7** at the start and end of their WW2 topic with a view to understanding how they perceived the topic at the outset and at the close of the topic. Tasks were evaluated by employing the methodology outlined in Chapter 3 and the study setup outlined in Chapter 4. The findings in each section of this chapter are organised according to the factors outlined in Chapter 3 in relation to each research question: *completion rate, perception of task requirements, sources used, how information was searched for, how information was selected, task enjoyment, task success* and *situational* and contextual factors. The findings are also related back to the relevant research questions. The chapter concludes with a summary.

Section 1: The Poster Task

In this section the findings of the Poster Task will be presented, beginning with a brief recap of the task criteria and guidelines as these were outlined to the children and a recap of the methods used to evaluate the task. The findings from the post-task traffic light evaluation sheet completed by the children are then presented. Findings for each of the six groups are presented in turn including tables resulting from the content analysis of each poster (or artefact), incorporating observations made during the poster completion and presentation phases of the task, comments that arose in focus groups and teacher comments specific to each group's completion of the task. Following this, my overall observations of the task will be presented. This section

concludes with additional teacher comments and a summary of the findings for this task.

Task Criteria and Guidelines (quick recap)

- Each group was assigned a different wartime job by the teacher.
- **Task criteria:** be able to discuss jobs with other children, create a poster by first finding out about it, present the poster as part of group, complete the poster element of the task in two 45 min sessions.
- **Elements** to be included on poster: **Title, Information** about job, **Equipment** used in job, **Illustrations**.
- **Poster guidelines:** include appropriate information, include lots of information, include enough information.
- Acceptable **sources:** books, class library, own knowledge, each other, objects in class, Internet, printed materials (text/pictures/photos that could be copied/cut and pasted onto posters).
- Groups should decide on the following *roles*: **Reader, Recorder, Presenter, Designer**.

Once children had finished their posters they stood before the class to give a short presentation about it. The rest of the class was allowed to ask questions. Each group took its turn to talk in the order: 5, 4, 2, 3, 6, 1.

The evaluation of this task was designed to gather both the child and teacher perspectives of the task and involved the use of the following research methods:

- **Observations** (non-participatory) of whole class during task introduction, of one group (Group 3) during poster making in session 1 of the task, observing the class as a whole during session 2 of the task. While completing the group-specific observation in session 1, I was also able to observe other activities that were happening around the classroom and open area as the task was underway. In session 2 I

was also observing as each group made their presentations to the class.

- **Traffic Light Evaluation Sheet** completed individually by children as soon as they had completed the poster and presentation.
- **Artefact analysis** completed by analysing the content of each poster produced, in the days following the completion of the task with respect to the task criteria and guidelines.
- **Focus groups using artefacts** completed within 2 weeks of the task on a group-by-group basis with the group's poster available for the discussion.
- **Teacher interviews** completed within 4 weeks and 10 weeks of the task respectively.

Completion Rate (overall)

Here I discuss the completion rate of the task by the groups overall. This data is of particular relevance to **RQ1** on task success. Note that it was neither practical nor meaningful to complete a gender analysis in respect of **RQ5** for this overall analysis of the posters as all groups were composed of a mixture of boys and girls and it was not clear solely from inspection who in the group had been responsible for each part, however, gender will be explored in relation to the data collected by other means. My observations of the class identified that all six groups fulfilled all of the **task criteria** outlined in the first session namely: discuss jobs with other children, create a poster by first finding out about it, present the poster as part of group, complete the poster element of the task in two 45 min sessions.

Six posters, one per group, were produced over the course of two sessions; these may be viewed in Appendix 15. These posters underwent artefact analysis to establish how well children had completed the required **elements** and how well they had adhered to the **guidelines**. This analysis revealed that every poster had a **Title, Information about the job** and **Illustrations** as required.

Two groups (Munitions and Billeting Officer) failed to include details about **Equipment** related to the job. The task *guidelines* (appropriate info, lots of info, enough info) were adhered to in full by only two of the groups (Group1 ARP Warden and Group2 Women’s Land Army). The other four groups had failed to adhere to at least one of the guidelines. Table 5.1 below provides an overview of the elements present and guidelines adhered to by each group.

Group/ Element or Guideline	1 ARP Warden	2 Women’s Land Army	3 Munitions Workers	4 Billeting officer	5 Auxiliary Fire Service	6 Home Guard
Title	Y	Y (misspelled)	Y (rushed)	Y	Y/N (incomplete)	Y
Info about Job	Y	Y	Y	Y	Y/N (doesn’t explain role)	Y
Equipment	Y	Y	N	N	Y (lots)	Y
Illustrations	Y (a few)	Y (one)	Y (many)	Y (many)	Y (a few)	Y (many)
Appropriate Info	Y (one exception)	Y	Y	Y/N (some out of context)	Y/N (some out of context)	N (many mistakes)
Lots of info	Y (11 bits)	Y (5 large bits)	Y/N (v. short sentences)	Y (6 bits)	N	Y
Enough info	Y	Y	Y/N	Y	N	N

Table 5.1: Poster Task Overview of Completion Rate in terms of Task Element and Guideline Adherence

So it can be seen that Group 1 and Group 2’s posters are the most adherent, with the others following in roughly the order: Group 4 Billeting Officer, Group 3 Munitions Worker, Group 6 Home Guard with Group 5 Auxiliary Fire Service in last place. Note that when the teacher was asked in interview which of the poster she thought was most successful she named the Women’s Land Army poster and said that Home Guard and Auxiliary Fire Service had been weakest, which accords well with the analysis above.

Task Success-Traffic Light Evaluation

Immediately following completion of the task, each child completed a **traffic light evaluation sheet** to reflect on their group's performance of the task. This is discussed in more detail in Chapter 3 Methodology. A sample may be viewed at Appendix 10. Findings for 29/30 children were obtained. This evaluation was particularly relevant to **RQ1** on **Task Success** and it was also possible to perform a gender analysis on the data in respect of **RQ5**. Table 5.2 below shows results from the first section of the sheet where children were asked to rate different aspects of their group's performance of the Poster Task.

Statement	Green	Amber	Red
Made decisions	27	2	0
Got everyone's ideas	27	2	0
Kept to the task	26	3	0
Took turns to speak quietly	24	5	0
Kept to the time given	22	7	0
Listened to each other and thought about what others were saying	21	8	0
Spoke to each other in a friendly manner	18	11	0

Table 5.2: Poster Task Traffic Light Evaluation Findings

It can be seen from the table that, according to this evaluation, children were largely positive about their groups' performance with regard to all the listed aspects of the task. It is notable that none of the children gave a **Red** rating to any of the categories and (not visible from the table) that eight children gave the **Green** rating to all of the categories. The vast majority of children thought they had been good at making decisions, getting everyone's ideas and keeping to the task. Those children who were critical of their group's performance tended to mention their group's friendliness towards each other, timekeeping and not having listened to one another as areas that had been wanting.

When a gender analysis was performed on this data in the interests of **RQ5**, in particular, it was found that boys and girls rated all aspects of their group's performance of the task **Green** at a similar rate to each other (4f, 4m) but that girls tended to be more critical of their group's performance in general. Of the 38 times that a category was rated as **Amber** rather than **Green**, 22 of these were by girls, 16 by boys. There were no categories where girls and boys' answers were particularly different in the degree to which a statement was agreed or disagreed with, but girls tended to be more critical of their group's performance than boys were. This was the case in all seven of the categories on the evaluation sheet. There is some evidence in the literature that girls will often rate their performance lower than that of boys performing the same task despite external observations of similar performance success and it may be the case that this is what is also happening here. It is worth bearing in mind however that here they were asked to rate their group's performance rather than their own individual performance of the task, though it is possible that the same phenomenon produced a similar effect.

There was some variation between groups as to how they rated their performance using this evaluation method. Typically, groups would record between 7 and 9 Amber ratings overall amounting to around 1 Amber per category per group however there were a couple of exceptions: Group 1 were most self-critical about their performance with 14 Amber ratings (1-3 in each category). Group 2 on the other hand were the least self-critical with only 5 Amber ratings. This is further discussed in the group-by-group analysis and compared with findings from the other research tools. There were no evident differences within particular groups as to how girls in the group were rating their group's performance compared with how boys in the group were doing the same.

For the second part of the evaluation sheet, children were asked to list, as bullet points, four things that they had learned. All but one child completed this part of the evaluation sheet in the manner intended. One had written instead about

how she had completed the task, and her enjoyment. Generally speaking, children wrote bullet points that were very similar to extracts from the poster their group had made. A few repeated mistakes from the posters and others wrote rather dogmatic responses that perhaps betrayed a lack of understanding of the task material e.g. repeating a misunderstood fact about the AFS (Auxiliary Fire Service) being renamed the NFS (National Fire Service). Several of the children in Group 5 made this same mistake. The Group 6 Home Guard group was also inclined in their responses to repeat mistakes that had been made on their posters. The Group 1 ARP Warden responses tended to be very reflective in comparison to those by other groups. Note that they were also the most self-critical in the first part of the traffic light evaluation. Further findings for each group using the traffic light evaluation method will be reported in the group-by-group summaries that follow this sub-section.

Group 1 ARP Warden

The poster for this group was available for analysis and all five of the children from this group took part in the focus group. We have already seen that this was one of the stronger posters and this will be discussed further later in this section. In the **traffic light evaluation** this group was far more self-critical than any of the others, pointing to frictions regarding friendliness, listening to each other and taking turns to speak quietly in particular. This was corroborated by statements made in the focus groups, as we will see later.

Group 1 were last of the six groups to give their poster presentation and I saw from my observation that they did it in a way that showed that they had engaged extremely well with their job topic and had understood a good deal about it. They did something unique among the groups by beginning by asking the class what they thought ARP (Air Raid Precautions) stood for. They were able to talk about ARP in detail: about how it was done and a bit about when it happened and who was involved. They were able to explain what “pre-fabricated” meant when asked by one of the children in the audience (which is

interesting, as it is not clear from looking at the poster alone that they had truly understood what was meant by the word; the piece of information referring to prefabrication is unfinished and tails off in a way that makes it somewhat meaningless). This group were also able to explain during their presentation what the blackout was and could convincingly describe in detail what the blackout would have been like to experience.

Group 1 Completion rate (RQ1):

As already seen, Group 1's ARP Warden poster included all of the elements required and largely met the guidelines. The information and images selected and created were appropriate to the task, though as previously described, piece of information on prefabrication seemed to have something missing from it, and they had not used many images.

Elements:

- **Title:** YES
- **Information** about job: YES
- **Equipment:** YES
- **Illustrations:** YES (but few)

Guidelines:

- **Appropriate** Information: YES. All is appropriate to the job, but one piece does not make sense.
- **Lots** of Information: YES. 11 pieces, little repetition.
- **Enough** Information: YES

Group 1's poster was analysed further for content to address further the needs of **RQ1** on success in information seeking and **RQ3** on preference of information channel in particular. The findings are presented below (Table 5.3). (Group 1's poster may be found in Appendix 15 with labelling corresponding to that used here for each text and image segment).

Title and organisation	Text	Quality of text	Images	Quality of images
<p>“Air Raid Precautions”</p> <p>Title 2D handwritten with black marker, multi-coloured filler.</p> <p>Title complete.</p> <p>Title takes of 1/3 of space</p> <p>Organisation: Title at top, mid section has a series of explosion noises handwritten as large text with emphasis marks. Bottom 1/3 features cloud-type formations containing each piece of text. Each contains a sentence.</p>	<p>11: Handwritten with exception of text by print image of warden. All excerpts very short: one sentence only.</p> <p>ARPttext1 “1.4 million ARP wardens worked a full time day”</p> <p>ARPttext2 “Did you know that ARP stands for air raid precautions?”</p> <p>ARPttext3 “The(sic) wear helmets with a big W on it!”</p> <p>ARPttext4 “if light was spotted the wardens would say ‘shut the light’”</p> <p>ARPttext5 “They had rattles to signal a poison gas attack and a bell to ring when it was over”.</p> <p>ARPttext6 “They wore protective clothing along</p>	<p>Overall: GOOD</p> <p>ARPttext1 GOOD accurate stat on nos employed.</p> <p>ARPttext2 GOOD accurate definition</p> <p>ARPttext3 GOOD accurate information about their helmets</p> <p>ARPttext4 GOOD accurate information that helps explain role.</p> <p>ARPttext5 GOOD accurate information that details equipment and when/how used.</p> <p>ARPttext6 GOOD accurate information</p>	<p>3. One printed, two hand-drawn.</p> <p>ARPiimage1 printed image of a warden blowing a whistle</p> <p>ARPiimage2 A series of decorated pieces of text representing explosion sounds in the middle of the poster between the title and the main text.</p> <p>ARPiimage3 Hand drawn image of a bomb</p>	<p>Overall: GOOD</p> <p>ARPiimage1 GOOD Shows uniform and role in action with piece of Air Raid instruction accompanying</p> <p>ARPiimage2 GOOD illustrates the environment the wardens would be dealing with.</p> <p>ARPiimage3 GOOD. Shows what wardens were reacting to.</p>

	<p>with wellington boots to guard legs in case gas wars were used.</p> <p>ARPttext7 “ARP Wardens are responsible to give out gas masks and prefabricated” (sic)</p> <p>ARPttext8 “In September 1935, four years before the word war 2 began, British Prime Minister Stanley Baldwin published a circular entitled Air Raid Precautions”</p> <p>ARPttext9 “their main purpose was to patrol the streets during the blackout!”</p> <p>ARPttext10 “The ARP wardens also reported the extent of bomb damage and assess the local need for help from the emergency and rescue services”</p> <p>ARPttext11 “in a raid-Do not</p>	<p>detailing purpose of clothing.</p> <p>ARPttext7 OK accurate information about gas masks plus some nonsense.</p> <p>ARPttext8 GOOD accurate information explains formation & name.</p> <p>ARPttext9 GOOD accurate information explains what they did/when with correct terminology</p> <p>ARPttext10 GOOD explains some responsibilities+ how it fitted in with other efforts.</p> <p>ARPttext11 GOOD actual instructions that were circulated.</p>		
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	rush, take cover quietly, then others will do the same.			
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Table 5.3: Group 1 ARP Poster Task Content Analysis

It can be seen from the table above that all of this group’s information was handwritten on the poster, which is interesting given that they also had the option of copying and pasting printed materials. This made it a particular challenge for me to establish where each piece of information had come from, particularly as I was not able to observe all groups while they were on-task. I was able to discover however, on reading the text, that some excerpts had probably been copied verbatim from the printed sheets the teacher had provided and that some were from the web, though because the teacher had used web information to make the printed sheets it wasn’t always possible to be exactly sure where they had found each piece or selected it from. ARPtext2 in particular, seemed to be something they had come up with by themselves. The cut out image ARPimage1 had certainly come from the printed sheets provided by the teacher. The origins of the information would be further explored in the focus group.

The findings below are drawn from the focus group with Group 1 using the poster as an artefact to support the discussion.

Group 1 Perception of task requirements (RQ1, RQ5):

- The main tasks were to: “say what a Warden was, explain why were they picked, say why they did not go to war and write some interesting facts about him”. (Group1Boy2).
- It would be important to include information “about the ARP’s location and whether he would be able to move around” (he was not able to find this out or perhaps did not have time to research it) (Group1Boy2).

- They were supposed to put as much information on the poster as they could find, design it, and use information they found themselves, not just the information that the teacher had given them (Group1Boy3).
- All agreed that every piece of text apart from the text accompanying ARPimage1 was written in their own words.
- ARPimage2 was drawn by hand instead of adding more text so that the space would be filled and “people wouldn’t get bored” (Group1Girl2).

Group 1 How information was searched for (RQ1, RQ3, RQ5):

- All agreed that some info had come from the Internet but could not always be sure which pieces, nor say exactly where they found them.
- They said they found a lot of info on the web about ARP Wardens, but they could not find any images of ARP men (Group1Boy2).

Group 1 How information was selected (RQ1, RQ3, RQ5):

- ARPtext4 was selected as “cos it’s actually telling you what they did, what their job was and what they did when it was bombed” (Group1Boy2).
- ARPtext4 was also selected because it explained that, “people really needed help which is why they called the rescue services” (Group1Girl1).
- ARPimage1 was selected to show how to recognise wardens (Group1Boy2).
- ARPimage1 was selected to give an example of what to do in a raid (Group1Girl1).
- ARPtext8 was the best bit of information on the poster as it explained when things happened (Group1Girl1, Group1Boy2, Group1Boy3).

- ARPtext2 was the best bit of information because even though “it’s a lot...because if you didn’t understand what ARP stands for then you didn’t understand anything” (Group1Boy1)
- ARPimage3 was the best bit of information. It was different because it was about the person’s job, not just about the person (Group1Girl2).
- ARPimage1 was placed to cover a mistake in a drawing that had been made earlier (All).

Group 1 Sources used (RQ3, RQ5):

- ARPtext2 came from their own knowledge (Group1Boy2).
- Mentions of blackout e.g. ARPtext4, which is about lights, came from what they learned in a previous lesson (Group1Girl1, Group1Boy2).

Group 1 Task success (RQ1, RQ5):

- 4/5 children in the group thought they had met the success criteria. Group1Girl2 disagreed.
- They awarded the poster 6/10 (Group1Girl2), 7/10 (Group1Boy2), 8/10 (Group1Boy1), 9/10 (Group1Girl1) and 9/10 (Group1Boy3).
- They agreed that the class learned something from their presentation.
- Group1Girl2 thought their presentation had not gone as well as she wanted and that they missed out some info about ARP Wardens.
- The poster was good because they worked really hard as a team and found a lot of “brand new” information that they could learn from (Group1Boy3).
- The poster was not worth full marks because it did not explain much about ARP Wardens and they left a big space empty and had not really said that the job was keeping people safe from bombs (Group1Girl2).
- They thought they could have worked even harder and better as a team (Group1Boy3, Group1Girl1).

- They should have done less arguing (Group1Boy1).
- The information they had put on might not be new to people and so they wouldn't learn anything (Group1Boy3).

Note that these last few remarks accord with what was captured by the traffic light evaluation for this group.

Group 1 Task enjoyment (RQ1, RQ5):

- All agreed that this had been one of their favourite tasks on the topic.
- Colouring in and drawing bomb clouds were enjoyable (Group1Girl2).
- Using the computer was enjoyable (Group1Boy1, Group1Boy3).
- Doing something different from what they usually did in school and doing it on their own was enjoyable (Group1Boy2).
- Working well together as a team was enjoyable (Group1Girl1).

Group 1 Situational and contextual factors (RQ4)

- One had done some searching at home to find out about gas masks and knew some additional information this way but this information had not made its way on to the poster (Group1Girl2).

Group 1 Summary

This group had done a good presentation that showed good understanding of the job they had researched, even if they hadn't all rated their performance in the presentation highly. They had completed all elements in line with the guidelines. They were very critical about how they had performed the task in the traffic light evaluation, particularly in terms of how they had worked together. The focus group revealed further evidence of these frictions. Despite these issues, in the focus groups they indicated that they mostly thought they had done really well and had enjoyed the task. They had drawn on their existing knowledge for the information segments in a number of instances and had a

real sense of wanting to inform others and help them learn something new via the poster. Girls in the group mentioned enjoying the design and teamwork aspects of the task where boys had got more out of using a computer. They were keen that the poster should involve as much of their own effort e.g. doing their own designs, writing everything by hand in their own words and using information they had not been directly given for the task. In parallel with this, they had done their best to find images online, even though there were some available on the printed sheets, though this could of course have been down to a lack of co-ordination between different roles in the task. Their poster was very much about the activities of the job rather than the people involved. Due to the handwritten nature of this poster, artefact analysis alone could not reveal which parts had come from printed sheets and which from the web, which made source identification difficult. Artefact analysis could also not reveal why certain bits of information had been chosen and the focus group assisted in this to a degree. Focus group discussions revealed that the children didn't always immediately remember the information they had put there themselves nor where they had found it but that they could do so for a majority of the information segments. The teacher thought this group had done a good job of the poster, in fact it was one of the best. She recognised that there had been some tensions in the group but they had succeeded despite them.

Group 2: Women's Land Army

The poster for this group was available for analysis. In interview, the teacher had indicated that she thought this was perhaps the strongest poster. Three of the five children from this group took part in the focus group: Group2Girl1, Group2Girl3, Group2Boy2. Group2Boy1 did not take part due to having been moved to another group due to a behaviour clash with another child in the group during an unrelated non-topic activity and Group3Girl1 was not at school on the day when the focus group took place. In the **traffic light evaluation** this group was far more positive than any of the others, with four group members answering Green to all of the categories. This positivity was corroborated by comments made in the focus group as we will see later.

Group 2 were third of six to give their presentation. I saw during my observation that they spoke well about what the Women's Land Army was and also about how it was formed. However, they did not really explain why the Women's Land Army was necessary and nor did they talk about who was involved. Other children in the class watching the presentation asked them whether the Women's Land Army workers had earned much and the group answered 'no' confidently.

Group 2 Completion rate (RQ1)

Group 2's Women's Land Army poster included all of the required elements, had kept to the guidelines and all of the information and images selected and created were appropriate to the task. There were slight errors in the title and some spelling and grammar errors in the texts added but the information segments were all largely relevant to the task.

Elements:

- **Title:** YES but slight name error
- **Information** about job: YES
- **Equipment:** YES illustration
- **Illustrations:** YES but only one

Guidelines:

- **Appropriate** Information: majority is pertinent
- **Lots** of Information: YES multiple big paragraphs
- **Enough** Information: YES

Group 2's poster was analysed further for content to address further the needs of **RQ1** on success in information seeking and **RQ3** on preference of information channel in particular. The findings are presented below (Table5.4). The poster

for Group 2 with labelling corresponding to that used here for each text and image segment may be found in Appendix 15.

Title and organisation	Text	Quality of text	Images	Quality of images
<p>“Woman’s Land Army!”</p> <p>Title very elaborate</p> <p>Title takes up 1/2 of space</p> <p>Title has 3D writing in black marker outlines+multi-coloured text in ink and decorative patterns around it.</p> <p>Title complete.</p> <p>Organisation: colourful embellishments surrounding each piece of text in cloud-type formations.</p> <p>Each cloud operates as a panel and has a number to be read in order roughly left to right.</p> <p>Each panel has a subtitle.</p>	<p>4 (handwritten) numbered pieces with handwritten subtitles.</p> <p>WLAtext1 “1. What is it? The government started the Woman’s(sic) Land Army when Britain was running short of food. They wanted to increase the amount of food, but to do this, they needed more help on farms so they advertised to encourage more people to join the womens (sic) land army”</p> <p>WLAtext2 “2. What kinds of jobs did the land army do? The women in the land army looked after animals, ploughed up potatoes, harvested crops, killed rats, dug for hours a</p>	<p>Overall: GOOD</p> <p>WLAtext1 GOOD Explains reasons for formation, threats from food shortage. advertising, recruitment of women.</p> <p>WLAtext2 GOOD Explains responsibilities, working hours, pay and wage increases with dates.</p>	<p>One hand-drawn</p> <p>WLAimage1 retro hand drawn image of woman farm worker with retro farm clothing and hand tools standing in a field.</p>	<p>Overall: GOOD</p> <p>WLAimage1 GOOD Image appropriate in terms of equipment, clothing, setting, gender, archaic style.</p>

	<p>week and 50 hrs a week in the summer. The women earned £1.85 for a working week with a minimum working hours. In 1944 the wages were increased to £2.85”</p> <p>WLAtext3 “3. Memorial to war. The memorial stands in Whitehall, 100 yards from Cenatoph(sic) the 22ft high memorial depicts the uniform (working clothes) worn by women during the war”</p> <p>WLAtext4 “4. Even More!...The womans (sic) land army was a British civilian organisation crated during the 1st and 2nd World War. Women who worked in the women’s land army were called the land girls. Women’s land army was</p>	<p>WLAtext3 OK/GOOD Details a memorial in London that shows the uniform they wore.</p> <p>WLAtext4 GOOD Explains nickname, date of set up, civilian status and previous existence in WW1</p>		
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	set up in June 1939”			
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Table 5.4: Group 2 Poster Task Women’s Land Army Content Analysis

This poster was among the most visually striking of all the posters with a clear title and clearly demarcated sections for each aspect of information. It can be seen from the table above that all of this group’s information was handwritten on the poster, which is interesting given that they also had the option of copying and pasting printed materials. This made it potentially challenging to establish where each piece of information had come from, but I had noted during my observations of the class that girls from this group were working at the desk making the title and writing information to the left of the poster before the other children returned from using the computers for Internet searching, so I knew that at least some of the information was likely to have come from the printed sheets, or, possibly, from their existing knowledge. In fact, much of it seemed to have been copied verbatim from the sheets with the occasional mistake. The origin of the information was explored further in the focus group.

The findings below are drawn from the focus group with Group 2 using their Women’s Land Army poster as support for the discussion.

Group 2 Perception of task requirements (RQ1, RQ5):

- “To find out about the Women’s Land Army, why it was there, when it was made and what was its purpose” (Group2Girl3).
- “To go on the computer and get information” (Group2Boy2).
- The poster was “to show others about WW2” (Group2Girl1).
- The poster was “to tell people about jobs at the time” (Group2Girl3).

Group 2 How information was searched for (RQ1, RQ3, RQ5):

- WLAtext3 and WLAtext4 were found on the web by boys in the group.

- They could not find information online about where the WLA workers worked, despite trying (Group2Boy2).
- They looked for pictures online, found them but were not able to print them (Group2Boy2, Group2Boy1).
- The limited time that could be spent on computers before having to return to help the others, made the task difficult (Group2Girl1).

Group 2 How information was selected (RQ1, RQ3, RQ5):

- WLAimage1 was copied from the pre-printed sheets because it looked “really nice” (Group2Girl1).
- WLAimage1 was copied from the sheets because they did not have any other images and because it showed a woman working (Group2Girl3).
- WLAtext1 was thought to be important to inform people who did not know what the WLA was, what it was (Group2Girl1).
- They could not say why they had chosen to draw WLAimage1 rather than just cut and paste an image from the pre-printed sheets.
- WLAtext2 was picked to show that they worked hard and were paid little (Group2Girl1, Group2Boy2).
- WLAtext2 (about the types of jobs they did) was thought by one child to be more important than other information they could have added but she could not say how (Group2Girl3).
- WLAtext4 was “facts about Women’s Land Army”. It was a “bit extra” (Group2Girl3).
- WLAtext3 was valued for different reasons by different children. Some thought its importance lay in telling people that there was a memorial that could be visited in order to find out about the war (Group2Girl3) and where it was (Group2Boy2), while another thought that it was important because it described what the Women’s Land Army workers had worn during the war (Group2Girl1).

- WLAtext1 had been positioned so that people would read it just after they saw the title and ask themselves “What is it (the Women’s Land Army)?” (Group2Girl3).

Group 2 Sources used (RQ1, RQ3, RQ5):

- They agreed that they got most of the information from the pre-printed sheets and were aware that this was mostly sourced from the Internet.
- They were keen to use pictures from the web but not being able to print meant they could not use them (Group2Boy2, Group2Boy1).
- They were keen to use more web information but the time limit prevented this (Group2Girl1).

Group 2 Task success (RQ1, RQ5):

- They all agreed that they had met the success criteria.
- They awarded the poster with a score of 8/10 (Group2Boy2), (Group2Girl1) 8/10 and (Group2Girl3) 9/10.
- “We thought the structure was actually quite good” (Group2Girl1).
- “But we could have added more pictures” (Group2Girl1, Group2Girl3).
- They could have added more info (Group2Girl1, Group2Boy2).
- One boy said he “only liked the picture” (Group2Boy2).
- They had worked well as a team, having “got on with it” (Group2Boy2)
- They had “got what we wanted to get” (Group2Girl1).

Group 2 Task enjoyment (RQ1, RQ5):

- They all thought the task had been fun.
- Some had liked doing the colouring (Group2Girl1, Group2Girl3).
- One had enjoyed doing the presentation (Group2Boy2).

- Another disliked the presentation “it’s the worst part!” (Group2Girl1).
- They disagreed on how easy it had been, with some contradiction e.g. “all of it was easy” but also it was “tricky”. (Group2Girl3).

Group 2 Situational and contextual factors (RQ4, RQ5)

- “The easiest part was ‘What is the Women’s Land Army?’, “because we learned it in class and had the sheets in front of us”. (Group2Girl).
- They said the time limit on the task had been one reason why they had not used more web information, the lack of printer, the same.

Group 2 Summary

This group had done a reasonably good presentation that showed some understanding and engagement with the topic they had researched. They hadn’t all enjoyed doing the presentation however. They had completed all elements of the poster in line with the guidelines. In the traffic light evaluation they had rated themselves Green for almost everything and they were similarly positive about their performance in the focus group, believing that they had met the success criteria particularly in relation to team working. The boy in the group was interested in the computer use aspect of the task, where girls were enthusiastic about the chance to tell others about the job and doing the design. Half of the information had come from the web and half from pre-printed materials. It was hard to find specific information online perhaps due to them not having enough time but they had found some. They did feel they could have added more information. They felt that the lack of print facilities had affected the quality of their poster. Several comments betrayed that not all items had been negotiated before being put on the poster but they were all still valued highly by all. They had enjoyed the task and had drawn on their existing knowledge to complete it. The handwritten nature of the poster made the focus group particularly necessary to establish the sources used. The teacher commented during one of her interviews that she thought that this was one of the more successful posters.

Group 3: Munitions Workers

The poster for Group 3 was available for analysis and all five members of the group took part in the focus group. In interview the teacher said she thought that this had been one of the “middling” posters i.e. neither one of the best nor one of the worst. In the **traffic light evaluation** this group were slightly self-critical about their group interactions during the task but there was no one aspect of carrying out the task that that had caused them particular concern. This was corroborated by comments made in the focus groups. Uniquely, I was able to observe this group as they carried out the task and these observations form a large part of the findings for this group.

Group 3 were fourth of the six groups to give their presentation and they did it mostly very well. They were good at explaining who munitions workers were and went into great detail about what munitions workers did and how they did it. They also talked knowledgeably about the dangers that munitions workers had faced. The group did not seem to be clear about why munitions workers existed nor why they were needed. When asked by the teacher, this group were able to explain why nearly all of the munitions work was done by women, i.e. men were away at war.

Group 3 Completion rate (RQ1)

Group 3's Munitions Workers poster did not meet all of requirements for the task, but included text and images, all of which were appropriate to the job. Information about equipment was missing and it was slightly sparse.

Elements:

- **Title:** YES (but rushed)
- **Information** about job: YES
- **Equipment:** NO
- **Illustrations:** YES lots

Guidelines:

- **Appropriate** information: YES
- **Lots** of information: YES/NO (very short sentences)
- **Enough** information: YES/NO

Group 3's poster was analysed further for content to address further the needs of **RQ1** on success in information seeking and **RQ3** on preference of information channel in particular. The findings are presented in Table 5.5 below. Group 3's poster with labelling corresponding to that used here for each text and image segment may be found in Appendix 15.

Title and organisation	Text	Quality of text	Images	Quality of images
<p>"MUNITIONS WORKERS"</p> <p>Title elaborate, if messy. Second word seems rushed-just black ink. First word is 2D multi-coloured.</p> <p>Title complete.</p> <p>Title takes up 1/5 of space.</p> <p>Organisation: All text is contained within hand drawn shaped text boxes in the shape of tanks, bombs, bullets and explosion clouds. All text is handwritten on piece of paper then pasted on</p>	<p>5 segments all handwritten</p> <p>MWtext1 "Nobody was allowed to take matches, coins, hairpins, rings, to the workshop. If you did you would cause an explosions (sic). BOOM!"</p> <p>MWtext2 "munitions workers were very busy people during world was 2. They made munitions for the army. The job hours were very long and tiring".</p>	<p>Overall: GOOD</p> <p>MWtext1 GOOD relevant accurate information about rules and consequences of not following them.</p> <p>MWtext2 GOOD accurate information about hard work, long hours and effects plus what they were doing.</p>	<p>3 images: 1 hand drawn, 1 photo+5 image shapes holding text</p> <p>MWimage1 Hand drawn image of a machine gun firing bullets, coloured in camouflage pattern.</p> <p>MWimage2 Printed montage image.</p>	<p>Overall: GOOD</p> <p>MWimage1 GOOD. Illustrates topic well.</p> <p>MWimage2 OK Montage has b/w image of WW2 destruction, b/w image of evacuee child, colour photo of soldier re-enactor with weapon, colour</p>

<p>to the drawn shapes.</p>	<p>MWtext3 “Munitions workers were people who made guns, tanks, hand grenades and bombs. It was a very dangerous job which could kill and injure people”.</p> <p>MWtext4 “They made sure British soldiers had bullets and bombs in the WW2. They made all sorts of weapons. They worked in munition factories. At the end of the day their hands would be all bruised and scratched”.</p> <p>MWtext5 “Munitions workers were women who made all sorts of weapons!”</p>	<p>MWtext3 GOOD accurate information with list of items they made plus dangers.</p> <p>MWtext4 GOOD accurate information mentioning who they supplied, where they worked and the effects on their hands. NB slight repeat of other panel.</p> <p>MWtext5 GOOD one sentence on what they made and fact they were (mostly) women.</p>	<p>MWimage3, MWimage4, MWimage5, MWimage6 hand drawn shapes that surround pieces of text.</p>	<p>photo of wartime gunners. Fine for overview purposes and one of the images is of munitions in use if not actually munitions being made or of munitions workers.</p> <p>MWimage3, MWimage4, MWimage5, MWimage6 GOOD bullet, tank, bomb, explosion cloud, explosion cloud.</p>
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Table 5.5: Poster Task Group 3 Munitions Workers Content Analysis

This was a very striking poster that was quite different from any of the others in its layout. The text boxes were all in the shapes of items of or related to

weapons or the use thereof and the military theme was evident in the use of colours, and a large drawing of machine gun shooting a bullet containing some text. All of the text was handwritten, which posed a challenge in identifying where text had come from using artefact analysis alone but the focus groups would be useful in uncovering some of this. The one printed image that was included was rather generic in nature and, while it was about the war, added little to the topic of munitions workers. Despite a visual appearance that was focused on weaponry, the text of the poster was very much focused on the work and conditions of the workers.

Group 3 During-task Observation Findings (RQ1, RQ3)

For the first session of this task I spent some time with Group 3 observing their progress on the task, following the children who were at the computer conducting Internet research in particular. The evidence gathered was of particular relevance to **RQ1** and **RQ3** on task success and preferred information channel in particular, with particular relevance, but not limited to the factors **Perception of task requirements, How information was searched for, How information was selected, Sources used** and **Task success**. The children who had elected to do the Internet searching for the group seemed to really struggle to find anything that they thought was relevant to the job that they were researching. I noticed however that the top hits that they found were for the Springburn Virtual Museum, an online resource that is full of information about the War in Glasgow (with that heading) i.e. local information and a likely source of at least some information that would be of use. They ignored (or perhaps dismissed, it wasn't clear) this site however and continued to search for other sites, which is evidence perhaps of their **perception of task requirements** and **how information was selected**. After many minutes searching, they eventually found a few links to sites about World War 1, which they clicked on, read briefly and then dismissed (evidence which feeds into **perception of task requirements** and **how information was selected**). They then found a recent news story from the BBC website about the possibility of awards being given to

former wartime munitions workers. They copied down quite a lot of information from that page eventually (copying by hand into jotters was necessary as they were not able to print) with relevance to **perception of task requirements** and **how information was selected**. They then decided, consciously or unconsciously, it was not clear, to search further on the BBC website itself by typing their search terms into a search box on the site providing evidence for **how information was searched for**. However, the first ten or so links that they found there were about wartime events in Wales (another part of the UK) and they decided after a discussion among themselves that these were not relevant because ‘the war took place in Scotland’. It was unclear whether they thought the war had indeed only happened in Scotland or whether they realized that it had happened in Wales too but wanted instead to find out information that was only about Scotland. This is further evidence related to **perception of task requirements** and **how information was selected** and has implications for **RQ2** on the support required from others for children’s information seeking.

The information below is drawn from the focus group that was conducted using the Munitions Worker poster as a support for the discussion.

Group 3 Perception of task requirements (RQ1, RQ5):

- They thought they had to search things on munitions workers: what they did, who they were, where they worked, what they wore. (Group3Girl2, Group3Boy1).
- They had to “make it look quite exciting” (Group3Girl1).

Group 3 How information was searched for (RQ1, RQ3, RQ5):

- They tried to find out on the Internet how much the workers were paid but had not been able to find this information (Group3Boy1).
- Some realised that info they found on the web was often similar to that on the pre-printed sheets (Group3Girl3, Group3Boy1)

- They realised there was more information online that was not on the sheets (Group3Boy1).

Group 3 How information was selected (RQ1, RQ3, RQ5):

- They found Internet images of former munitions workers, now grown old. They were not used because they could not print them as there were not facilities to do so (Group3Boy1).
- WLAtext1 was thought important because “it is about safety and rules” and because it was “surprising” information e.g. coins not being allowed in the factories etc. (Group3Boy1).
- MWimage1 (a machine gun firing) was drawn to show the type of weapons workers were making and to make the poster “more exciting” (Group3Boy1).
- MWimage2 from the pre-printed sheets was used because “there were no other pictures” (Group3Girl2).

Group 3 Sources used (RQ3, RQ5):

- They agreed that most of their information including pictures had come from the pre-printed information provided by the teacher.
- MWtext1 was thought to be from the Internet.
- MWtext3 was also thought to be from the Internet.
- MWtext4 may have come from the Internet but they could not agree.
- MWtext5 and MWtext2 came from pre-printed sheets, but they had used their own words (Group3Girl1, Group3Girl2).

Group3 Task success (RQ1, RQ5):

- They awarded their poster the following scores: 6/10 (Group3Girl1, Group3Girl3) 9/10 (Group3Boy2), 9.5/10 (Group3Boy1), 10/10 (Group3Girl2).

- The reason for the perfect score of 10/10 was due to the poster being neat and tidy (Group3Girl2).
- They said that the use of pictures to surround text made their poster better than others e.g. “it looks fun to read” (Group3Girl2).
- The inclusion of more hand-drawn pictures compared to other groups was seen as a positive (Group3Girl1).
- They thought their poster did not have as much info as others.
- They thought could have added more info in blank spaces (Group3Boy1).

Group 3 Task enjoyment (RQ1, RQ5):

- They had all liked the task.
- Getting to know some new things was enjoyable (Group3Boy1).
- It was enjoyable as they did not know anything about it before the task (Group3Boy2).
- It was enjoyable because they had not really cared about the war before and that had changed (Group3Girl2).
- “It was better than just doing work” (Group3Girl3).
- Getting to draw made the task enjoyable (Group3Girl2).
- “It was a fun way to learn” (Group3Girl2).

Group3 Situational and contextual factors (RQ4)

- Some information that had been found could not be used as they could not print it.

Group 3 Summary

This group’s presentation was focussed on what the munitions workers did but did not particularly address why these workers had been required. The teacher later said in interview that they had missed the point that women had done the job because men were generally not available as they were away at war. Their poster had all of the required elements apart from equipment, though it was

possible that they perceived the munitions depicted as equipment. In responding to the traffic light evaluation, they were less critical of their performance than most of the other groups apart from Group 2. This was corroborated by comments in the focus group where they said they thought they done the task well and that the poster was better than those of others in the class. The design element and visual impact in particular were thought to be particularly important. Making the poster look exciting was regarded as a priority. They had relied heavily on Internet information, which may be because children who were at the group table for the duration of the task were mostly engaged in doing the drawing elements of the poster design rather than working with the printed sheets. All of the text on the poster was handwritten and use of own words was stressed as important in the focus group. They rated their performance and their poster highly. Boys rated it slightly higher than girls did. Boys had liked the task due to the opportunity for learning new information where girls tended to mention the design elements. The inclusion of images and the themed hand-drawn elements were given as reasons for thinking it was better than posters made by other groups. The observations of the group while on-task allowed me to uncover aspects that did not emerge from the focus group. Carrying out the observation with this group allowed me to find out that they had perceptions about the relevance of information to the task that were surely narrower than was actually the case e.g. they had found a lot of relevant material, even local material that they had rejected needlessly. Carrying out the observation also allowed me to see that they were searching within websites such as the BBC rather than just relying on searches of the wider web and revealed that they were arguably wasting time searching for images as they could not print them and were either unwilling or unable to copy those that they did find. I learned a lot from the focus groups that was not clear from the observation, particularly with regard to task success and why they had selected particular pieces of information. The teacher said in one of her interviews that she thought this group were particularly enthusiastic about this particular wartime job and that other children were envious of this group and had wanted

to have this as the job on which they completed the task because it was about weapons, which was an interest for them.

Group 4: Billeting Officer

Group 4's poster was available for analysis and four of the five children in this group took part in the focus group: Group4Girl1, Group4Girl2, Group4Boy2 and Group4Boy3. Group4Boy1 was required to be elsewhere in the school on the day of the focus group and so could not take part. The teacher had thought this poster was either second or third best of all six posters.

Group 4 were the second of six groups to give their presentation. From my observation, this group gave a good presentation that indicated that they had engaged well with the material. They were able to provide good descriptions of what the job was, how the billeting officer worked and why and when the job was needed. When asked what fire rockets were, they were able to answer correctly and confidently. When asked about evacuation, they were able to say that it meant, "leaving a place". They were also able to explain why a billeting officer was needed saying that evacuation would be safer if such a person were involved and also "so children did not get lost'. During their presentation they made it clear that they knew that not only children were evacuated, but that elderly and disabled people had also been evacuated.

Group 4 Completion rate (RQ1)

Group 4's Billeting Officer poster did not include all of the elements required but they had adhered well to the guidelines. The vast majority of the text and images they had included were appropriate for the job. Just one seemed slightly out of context.

Elements:

- **Title:** YES

- **Information** about job: YES
- **Equipment:** NO (but uniform is shown)
- **Illustrations:** YES

Guidelines

- **Appropriate** information: YES/NO (some out of context).
- **Lots** of information: YES
- **Enough** information: YES

Group 4's poster was analysed by content to address further the needs of **RQ1** on success in information seeking and **RQ3** on preference of information channel in particular. The findings are presented in Table 5.6 below. NB An image of the poster for Group 4 is unavailable due to file corruption, however content analysis was done prior to this occurring.

Title and organisation	Text	Quality of text	Images	Quality of images
<p>"Billeting Officer"</p> <p>Title colourful and complete</p>	<p>5 segments all cut and pasted from sheets provided</p> <p>BOtext1 "Evacuation means leaving a place, during ww2 many places were in war so people had to be evacuated"</p> <p>BOtext2 "Billeting officers were people who found houses for the evacuees to live</p>	<p>Overall: GOOD</p> <p>BOtext1 GOOD contextual definition</p> <p>BOtext2 GOOD explanation of role.</p>	<p>5 images cut and pasted from sheets provided. +1 hand drawn</p> <p>BOimage1 large black/white picture of boy and girl</p> <p>BOimage2 Large blue propaganda leaflet image</p> <p>BOimage3 Small blue image of propaganda leaflet</p>	<p>Overall: GOOD</p> <p>BOimage1 GOOD Image of evacuee children.</p> <p>BOimage2 GOOD On topic about evacuation.</p> <p>BOimage3 GOOD On topic about evacuation.</p>

	<p>in, they also went around houses asking homeowners to take in evacuees.</p> <p>BOtext3 “Evacuation began on Friday 1st September 1939 and ended in march 1940”</p> <p>BOtext4 “Between 1939 and 1945 there were 3 major evacuations”</p> <p>BOtext5 “The second evacuation effort started when Germany attacked France on June 13th 1940. Around 100,000 children were evacuated during 1944. The Germans fired rockets on Britain. Around 1 million women children elderly and disabled were evacuated from London until 1945 before the war ended”</p>	<p>BOtext3 GOOD context with correct dates.</p> <p>BOtext4 GOOD context with correct dates.</p> <p>BOtext5 GOOD context and correct facts and figures. London only.</p>	<p>BOimage4 Small b/w image about TB</p> <p>BOimage5 Small b/w photo of people, one in uniform</p> <p>BOimage6 Hand-drawn of a billeting officer.</p>	<p>BOimage4 OK/BAD Possibly off topic. Not sure of immediate relevance of Tuberculosis to WW2 evacuation, still less to billeting officers.</p> <p>BOimage5 GOOD Appears to show an officer with children</p> <p>BOimage6 GOOD shows appearance and function of the officer</p>
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Table 5.6: Poster Task Group 4 Billeting Officer Content Analysis

It can be seen from the table above that this poster relied almost entirely on text and images provided on the printed sheets then cut and pasted on to the poster though one image had been hand drawn. All of these information segments were relevant to the job of Billeting Officer though one about TB seemed to be slightly or perhaps even wholly off topic. The poster title was very elaborate featuring bubble writing that was fully coloured in.

The comments below are drawn from the focus group in which the Billeting Officer poster was used as support for the discussion.

Group 4 Perception of task requirements (RQ1, RQ5):

- This group did not say much about what they were required to do but they did say they had to “do research” (Group4Boy2).
- “We had to write information about billeting officers” (Group4Girl1).

Group 4 How information was searched for (RQ1, RQ3, R5):

- This group said they had got some information “from the computer”.
- They thought (correctly) that all images had come from the pre-printed sheets.
- One of them claimed he found B0text1 first by searching on Google Dictionary with “evacuation”. (Group4Boy2).

Group 4 How information was selected (RQ1, RQ3, RQ5):

- B0text1 was thought important as it was about evacuation.
- The boy who chose B0text1 noticed that evacuation was mentioned a lot in relation to billeting officers so thought he should find and include something about it (Group4Boy2).

- BOimage1 was chosen as it showed two children looking happy because they were being evacuated (Group4Boy2). (Group4Girl1) clarified that this was because “they are ok” i.e. not in danger.
- BOimage1 was thought to be the best on the poster by a majority as it gave the most info, because it “stood out well” (Group4Boy2), and due to the expression on the children’s faces (Group4Girl1).
- BOimage2 was chosen because it was about evacuation.
- It was unclear whether BOfext3 about the dangers of TB was immediately relevant but they said they chose it as it told people to leave the city in case they died (Group4Boy2).
- BOimage6 was included as it showed what a billeting officer did.
- They all thought that BOfext2 was the best piece of information on the poster because it told what a billeting officer did.
- There was confusion about ARPtext2 as it mentioned bombing and evacuation but not billeting officers. As such, they could not in retrospect decide if it was a good piece of info to include or not.

Group 4 Sources used (RQ1, RQ3, RQ5)

- BOimage6 had been copied from a reading book that (Group4Boy2) had in his bag. The book was for Group4Boy2’s language lessons but happened to have relevant information in it. (remembered by Group4Girl1).
- BOfext1 and BOfext2 may have been found on the web but the group could not agree about this.
- For BOfext2 they acknowledged that the info on the Woodlands website was the same as info on the sheets.
- One boy thought the Woodlands site good as it had lots of info about the topic, listed by subject heading but cautioned that while the site had info about the London Blitz, it had none about Clydebank. Certainly he had not found it during another task (Group4Boy2).

- Group4Boy2 said they would have used more pictures if they had been able to find them as they allowed more detail than text alone.

Group 4 Task success (RQ1, RQ5):

- This group awarded their poster with scores of 6.5/10 (Group4Girl2), 7/10 (Group4Boy2), 8/10, (Group4Boy3), 10/10 (Group4Girl1).
- Those who scored it lower said it was not colourful compared to others (Group4Girl2), did not have enough drawings (Group4Boy3, Group4Boy2), could have stood out more (Group4Boy2) and could have had more info about billeting officers rather than just be about evacuation (Group4Boy2).
- They thought the teacher would rate it more highly than they had, with the exception of Group4Boy2 who thought the teacher would rate it much lower because other posters in the class were better.
- They thought it bad that there were big blank spaces left on the poster and so could have written more on it.
- They did not have much to say about their presentation of info but said they had not used much colour or drawing. This made it inferior to other posters (Group4Boy3, Group4Girl2, Group4Boy2).

Group 4 Task enjoyment (RQ1, RQ5):

- Part of the enjoyment had come from using a computer. This was enjoyable as it was easier than looking at pieces of paper and reading information from books (Group4Boy2).
- "I liked doing the design and the colours" (Group4Girl1).

- “I liked doing the writing in the bubbles and sticking the information on to the poster” (Group4Girl2).
- One “only really liked talking about the attacks and stuff. That was good the rest was boring”. (Group4Boy3).
- “not enough action-that would be a bit better it’s mainly about other stuff” (Group4Boy2).
- “I wanted it to be about Germany and stuff and Nazis and all the bombs”. (Group4Boy3).

Group 4 Situational and contextual factors (RQ4)

- The group were able to draw on information contained in a book that was not specifically for the topic nor had it been provided for the task. It just happened to belong to one of the children in the book who realised it might be useful.
- They knew now (though probably not at the time of the task) that the Woodlands website might not be a panacea for their topic tasks as some of them had found it of limited use during a homework task.

Group 4 Summary

This group had done a really good presentation that was very detailed. They talked beyond what was on the poster, indicating additional reading or learning that they had done either within or outwith the task. There were a couple of small issues with their poster in that it included no equipment for the job and had some slightly out of context information, but the teacher thought it somewhere just below the very top posters. The traffic light evaluation revealed that they felt that they had not kept well to the time allotted which perhaps accounted for the number of blank spaces on the poster and the regret about this expressed during the focus group. They thought they had met the teacher’s expectations for the task but were nonetheless rather hard on themselves regarding blank spaces and lack of colour in particular when rating themselves

in the focus group. This group relied almost entirely on information cut and pasted from the printed sheets but were still sure that some of it had come from their Internet searching and did not acknowledge that they had not used their own words for any of it. The confusion about the origin of the information was partly explained by the pre-printed information having originated on the web. It did perhaps indicate that they (and other groups, arguably) might have been duplicating work in a way that was unnecessary. They had shown some flexibility in their use of sources and copied an image from a book not directly related to the topic. They showed good insight about the limitations of one of the web resources they had used. Boys in the group had particular concern about the information aspects of the task, computer use and the lack of conflict or military oriented material in the task, where girls were more concerned with the design aspects.

Group 5: Auxiliary Fire Service

The poster for this group was available for analysis and all five children in the group took part in the focus group. In interview, the teacher had thought this was the weakest poster. In the **traffic light evaluation**, this group was not particularly critical of how they had conducted themselves in the task though 3 of them did rate “listened to each other and thought about what others were saying” as **Amber**.

Group 5 was the first of the six groups to give their presentation. The presentation revealed several gaps in their knowledge with regard to the job for which they had created the poster. When they were asked by the audience “What’s a rank?” they said they did not know. When the teacher asked them, “Why was the job important?” they could not quite say. During the presentation the teacher remarked that “the issue is how important the service was”, something she thought they had failed to capture on their poster or mention in their presentation.

Group 5 Completion rate (RQ1)

Group 5's Auxiliary Fire Service poster did not contain all of the required elements and had not met all of the guidelines either. A few of the pieces of text they had chosen were not relevant to the job and some elements such as the title were unfinished. They had not included information that truly explained what the job entailed.

Elements:

- **Title:** YES/NO (incomplete)
- **Information** about job: YES/NO (does not really say what the role is).
- **Equipment:** YES
- **Illustrations:** YES

Guidelines:

- **Appropriate** information: YES/NO (some out of context).
- **Lots** of information: NO
- **Enough** information: NO

Group 5's poster was analysed further for content to address further the needs of **RQ1** on success in information seeking and **RQ3** on preference of information channel in particular. The findings are presented in table 5.7 below. Group 5's poster may be found in Appendix 15 with labelling corresponding to that used here for each text and image segment.

Title and organisation	Text	Quality of text	Images	Quality of images
"The Auxiliary Fire Service" Title elaborate (but messy).	5 segments all handwritten AFStext1 "Fire was a huge threat to <illegible> There	Overall: GOOD AFStext1 GOOD accurate information explains threat	2 very small b/w photos from wartime. AFSimage1 photo of	Overall: GOOD AFSimage1 GOOD. This appears to be a wartime photo

<p>Black marker outline with multi-coloured and patterned fill, decorative outline.</p> <p>Title incomplete.</p> <p>Title takes up ½ of space.</p> <p>Organisation: Title in middle of bottom half of poster. Information arranged on randomly shaped blobs in a curved formation above title. All text is handwritten and much is very tiny.</p>	<p>were emergency fire water tanks installed in many towns”.</p> <p>AFStext2 “Fact. Many of the Auxiliary Fire Service were made up of Woman (sic)”</p> <p>AFStext3 “On many occasions a small quantity of foam was carried though it was not often used. Also, in regular use was an old ford lorry known as the dam. The lorry fitted with a <illegible> tank that had 1000 gallons of water when full”.</p> <p>AFStext4 “Water was the fire service’s main weapon against all fires and was taken from anywhere, including streams, rivers, paddling pools, swimming pools, garden pools or even bomb sites”</p> <p>AFStext5 “The Auxiliary Fire</p>	<p>from fire and action taken.</p> <p>AFStext2 GOOD accurate information explains that many who served were women.</p> <p>AFStext3 OK accurate information about the substances used and the spec. of some vehicles but a bit out of context and seems copied without thought. Does however appear below photo of fire engine.</p> <p>AFStext4 GOOD accurate information explains importance of water and the often unexpected sources of it.</p>	<p>personnel on a fire engine</p> <p>AFStext2 photo of an officer standing in front of a vehicle with AFS badge+ label “This picture was taken around 1941” “It was taken during the war!”</p>	<p>as the uniform is correct and the fire engine is of (one of the types used)</p> <p>AFStext2 GOOD. This appears to be a wartime photo. The officer uniform is correct and the badge on the vehicle is also correct.</p>
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	Service is now known as the National Fire Service”.	AFStext5 BAD misunderstood information. Appears to claim that current name is national fire service but actually this was the case in 1940, not now.		
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Table 5.7: Poster Task Group 5 Auxiliary Fire Service Content Analysis

This poster had a rather messy appearance. An elaborate title had been drawn but was only half finished with much of it left without colouring. Some of the information segments were rather messily handwritten and placed but the images included were good. The information included did not really say what the job entailed however. The handwritten nature of all of the textual information meant that not all of the sources could be immediately confirmed via content analysis though certainly some of it appeared to have come from the Internet. Further exploration during the focus groups would be required to establish this. The cut and pasted images had almost certainly come from the pre-printed information provided by the teacher and both were appropriate for illustrating the job.

The findings below are drawn from the focus group with Group 5 using the Auxiliary Fire Service poster as an artefact to support the discussion.

Group 5 Perception of task requirements (RQ1, RQ5):

- “We had to go on the Internet and look stuff up” (Group5Boy3).
- Group5Girl1 talked about roles taken in the task: Reader, Researcher, Note-taker and Artist. These were different names for the roles than the teacher used: Reader, Recorder, Designer.

Group 5 How information was searched for (RQ1, RQ3, RQ5):

- They looked for other images but none were thought to be very interesting.
- The images found during searches were nothing to do with the AFS (note contradiction with statement above).
- AFStext1 was found by typing 'Auxiliary Fire Service' in Google (Group5Boy3).
- One child thought that even though they had looked for information they had not done enough looking (Group5Girl1).

Group 5 How information was selected (RQ1, RQ3, RQ5):

- AFSimage1 was chosen because it was about water, and the AFS used water (Group5Girl1).
- AFStext4 was picked as it was funny and informative (Group5Boy3).
- AFStext3 was picked as it related to one of the images on the poster (Group5Boy3).
- They knew that AFSimage1 was taken during the war. It was good as it showed how the officers looked in uniform (Group5Girl1).
- They chose AFStext2 as it explained that women were involved (All).
- People would learn something from AFStext2 because they would not realise that women had jobs in a war (Group5Boy3).
- They chose AFStext5 as it was useful to know what the AFS is now called (they did not realise that the info referred to its new name in 1940, not its current name).
- They thought they should have had info about how they put fires out as "that's the main thing for the fire service" (Group5Boy3).
- They thought they should have included info about how much effort the AFS made, as "it's good for people to know how good and helpful the AFS were" (Group5Girl1).

Group 5 Sources used (RQ1, RQ3, RQ5):

- Images came from the pre-printed sheets. They said they knew they were allowed to cut them out (Group5Boy3, Group5Boy1).
- They could not agree which website AFStext1 came from but one thought it was the BBC and that it was good info (Group5Boy1).
- They agreed that if you could not find pictures you could usually draw them, but Group5Boy3 showed some real insight when he hinted that it depended on you already knowing what that thing looked like e.g. they already knew what a fireman putting out a fire looked like so would have been able to draw that.

Group 5 Task success (RQ1, RQ5):

- They awarded their poster a score of 4/10 (Group5Boy2), 6/10 (Group5Girl1, Group5Boy1, Group5Girl2, Group5Boy3) citing the unfinished title.
- This group thought they had met the success criteria for the task and thought the teacher would give it 7/10 or 8/10.
- They thought other groups had made a better job of their posters as they were more colourful, more “wow” and “stood out” more.
- Pieces of the poster were “missing” (Group5Boy3).
- They had run out of time to do finish the title (Group5Boy2).
- They were distracted by all the chatting (Group5Girl1).
- They had not added enough info (All).

Group 5 Task enjoyment (RQ1, RQ5):

- The task was fun (Group5Girl2, Group5Boy1, and Group5Girl1)
- The task was only ok because “I do not like posters because you have to present them”. (Group5Boy3).
- Group5Girl1 had enjoyed the task because of the variety of jobs she had done, working in different pairs to do it: taking notes

while someone else researched, drawing the poster with Group5Girl2.

- They all agreed that they had preferred the gas mask making task to this one.
- They thought Munitions Workers would have been more fun and easier to make a poster about than was the Auxiliary Fire Service.

Group 5 Situational and contextual factors (RQ4):

- Nothing specific was mentioned that particularly fitted into this category of analysis.

Group 5 Summary

This group's presentation was pretty weak indicating their lack of engagement with or understanding of the job they had to research. One of them said he wasn't fond of presentations. Their poster was the weakest of all six posters. Their poster had a few elements missing and appeared messy and unfinished. They had not enjoyed the task as much as other groups had and the criticisms they made of the group's interactions via the traffic light evaluation were borne out by comments they made during the focus group. When asked, they were very vague about what the task requirements had been. They had an advantage over other groups, arguably because everyone has some idea what a fireman looks like, and they acknowledged this. However, the teacher mentioned during one of her interviews that she had thought (post-hoc) that this job, Auxiliary Fire Service, was a difficult job to research. They group had searched for but hadn't copied any images from the web. They had conflicting reasons for why this had been the case: couldn't find any and those they found were not interesting. They had a different names for the roles that were to be taken during the task from those explained by the teacher, but why isn't clear. The poster relied on images cut and pasted from the printed sheets and on information copied by hand from these and from the BBC website. They did not rate their poster highly as they thought it poor in comparison to other poster in terms of title, amount of info and colour but thought the teacher would think it

was pretty good. They thought they would have made a better poster for one of the other jobs: Munitions Worker and that it would have been more fun to do.

Group 6: Home Guard

Group 6's poster was available for artefact analysis and also for supporting discussion during the focus group. In interview the teacher said she thought this one of the weaker posters, in the bottom two of the six. All four children in this group took part in the focus group: Group6Boy1, Group6Boy2, Group6Girl1, Group6Girl2. They were joined by Group2Boy1 who had been transferred from another group due to a behaviour clash (already mentioned in relation to Group 2 upthread). While Group2Boy1 had not been involved in the Home Guard poster, he chose to stay and participate in the focus group and was able to offer an outsider perspective on the poster, which the rest of the group seemed happy for him to do, indeed they were very curious about his opinion of their work. A certain degree of observation had been undertaken during this group's completion of the task during the second session. In particular, they were observed to spend an inordinate amount of time on creating and embellishing the Title on their poster at the expense of other activities. In addition, several of the children who spent the whole of the task at the table were observed to cut and stick information and images without fully reading the information first or discussing it with the others. One of the children was observed to copy an image from a book. The image was not relevant to the Home Guard but none of the children in the group noticed this, even putting a label that described it as the badge of the Home Guard. In the **traffic light evaluation** Group 6 were not especially self-critical of their interactions during the task, something that would be borne out by comments they made during the focus group.

Group 6 was the fifth of six groups to make their presentation and from my observation they made a rather mixed job of this. They were good at explaining when the Home Guard existed, why it came into being and how that had been achieved but seemed to be reading verbatim from the poster in order to do this.

Much of the information they were telling the audience seemed undigested. When asked, they could not explain why the Home Guard was so called. They remained unaware of the fact that they had included a badge on the poster that did not belong there, pointing to it and referring to it as the badge of the Home Guard.

Group 6 Completion rate (RQ1)

Group 6's Home Guard poster did not have all of the required elements nor did it adhere to all of the guidelines. They had included text and images on the poster that revealed either confusion about the topic or task or a lack of engagement with the material they had selected such as a badge that was unrelated to Home Guard.

Elements:

- **Title:** YES
- **Information** about job: YES
- **Equipment:** YES (photo)
- **Illustrations:** YES

Guidelines:

- **Appropriate** information: YES/NO (some misunderstanding)
- **Lots** of information: NO
- **Enough** information: NO

Group 6's poster was analysed further by content and the findings are presented in Table 5.8 below. The poster for Group 6 with labelling corresponding to that used here for each text and image segment may be found in Appendix 15.

Title and organisation	Text	Quality of text	Images	Quality of images
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<p>“The Home Guard”</p> <p>Title very elaborate, neat, complete.</p> <p>Title takes up 1/3 of space.</p> <p>Title has 3D writing: Black ink outline with patterned camouflage colouring.</p> <p>Organisation of information fairly random. Some titles against information segments.</p>	<p>6 segments (3 printed, 3 handwritten)</p> <p>HGtext1 handwritten “In January 1937 the government advertised volunteer for warden service on radio”</p> <p>HGtext2 handwritten “The Home Guard were volunteers who defended the thousand miles of Britain (sic) coastline in the event of an invasion by Germany. They were originally called the Defence Volunteers”</p> <p>HGtext3 “The Badge of the National Home Guard. A Volunteer was formed (sic) to defend the homeland while the regular army is fighting elsewhere”.</p>	<p>Overall: GOOD/OK</p> <p>HGtext1 GOOD accurate information relevant to task. One sentence.</p> <p>HGtext2 GOOD accurate information explains volunteer status, defence role and original name</p> <p>HGtext3 GOOD accurate information describing what Home Guard was (but badge is incorrect)</p> <p>HGtext4 OK accurate information. Title suggests slight misunderstanding of Home Guard</p>	<p>Total=7 (6 photos, 1 hand drawn)</p> <p>HGimage1, HGimage2, HGimage 3 HGimage4 3 colour photos of individuals +1 colour photo of equipment</p> <p>HGimage5 colour photo of a group</p> <p>HGimage6 black/white photo of a group of men</p> <p>HGimage7 drawing of a badge</p>	<p>Overall: OK</p> <p>HGimage1, HGimage2, HGimage3 HGimage4 OK 4 colour photos are of modern day wartime re-enactors wearing recreated uniform and equipment.</p> <p>HGimage5 OK colour photo is a still image of a 1970s BBC TV programme about the Home Guard called “Dad’s Army”. Image is not beside the printed information about Dad’s Army.</p> <p>HGimage6 GOOD photo is of a wartime Home Guard battalion with contemporary caption.</p> <p>HGimage7 BAD drawing is of a</p>
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	<p>HGtext4 printed with title “What is a Home Guard” below image of man: “The Home Guard defended key targets like factories. Ex stores beaches and sea fronts. At night they patrolled fiel..which the enemy gliders of paratroops might land. No one ..them to beat well-trained German soldiers. Their job was...them down until the army arrived”.</p> <p>HGtext5 printed “Dad’s Army is a British sitcom about the Home Guard in the Word War, written by Jimmy Perry and David Croft and br..on BBC television between 1968 and 1977. Below is a scre..a scene from the sitcom”</p>	<p>being an individual rather than a collective force.</p> <p>HGtext5 OK Describes a fictional TV programme. Does not explain what Home Guard is nor give additional topic information.</p>		<p>badge for the National Fire Service i.e. NOT The Home Guard</p>
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	<p>HGtext6 print+print title “Why was the Home Guard was formed”. “ On Friday 10 May 1940 the Germans had started their att.. Belgium and the Netherlands using soldiers dropped by pa... British troops in mainland Europe were pushed back to the ports. Many people feared that the Germans would soon..”</p>	<p>HGtext6 GOOD Overview of 1940 attacks on Low Countries and fear of attack on UK that partly explains need for Home Guard.</p>		
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Table 5.8: Poster Task Group 6 Home Guard Content Analysis

This poster was very attractive due to its elaborate title with appropriate camouflage colouring and a lot of images, many of which had labelling and several of which were in colour. Its strong aesthetic qualities perhaps masked that there were some serious errors on the poster. Certainly other groups in the class seemed to think that they had done a good job and that it was in the top 3 posters. Errors included the inclusion of a badge that did not belong to the Home Guard, an image of a TV series about the Home Guard being presented as contemporary wartime photos and photos of battle re-enactors being presented as actual wartime soldiers. The later focus group would confirm that the group were unaware of these confusions.

What follows below is drawn from the focus group with Group 6 using the Home Guard poster as support for the discussion.

Group 6 Perception of task requirements:

- They had to try and find out information (Group6Girl1).
- They had to design a poster using the information (Group5Girl2).
- The poster was for the class's WW2 display (Group6Boy1).
- The poster was for them and others to learn about the war (Group2Boy1).
- The Designer had to "organise where all the writing and headings and pictures go" (Group5Girl2).
- Group5Girl2 had taken on the Designer role and Group6Girl1 said she had helped to do this.
- Group6Boy1 said he had been a Timekeeper (a role that no other child in the class had mentioned, and neither had the teacher) and said he had to make sure they got everything done on time.
- Group6Boy2 said that he had been a Researcher (again, a title the teacher had not used) and needed to find things on the Internet "like pictures and more information".
- They said they had used dark green colouring in several elements including the title as it was the colour of the army and people understand that, also, because there were no bright colours during the war (Group6Girl2).
- HGimage7of the medal was hand-drawn because they wanted to show some of their artwork (Group6Girl2).

Group 6 How information was searched for (RQ1, RQ3, RQ5)

- They found it hard to research because of the need to go to different websites (Group6Boy2).

- “We found lots of information about what the Home Guard was but not much about why it was there” (Group6Girl2).

Group 6 How information was selected (RQ1, RQ3, RQ5):

- HGimage1 was chosen because “he’s a person to guard the people left behind. He’s showing his self... this is how they dressed then and that’s the equipment they’ve got” (Group6Girl2).
- HGimage3 was picked because the person in it looked “focused” (Group6Boy2) “determined” (Group6Girl2), “interesting” and “right to do the job” (Group6Boy1).
- HGimage4 was chosen because “it’s important to see what kind of bullets they used so that if you see those bullets you know to give them to the Home Guard” (Group6Boy1).
- HGimage7of the medal was chosen because they thought it represented the badge of the Home Guard (NB it did not).
- They could have improved the poster by putting more weaponry on it (Group6Boy1).
- HGtext1 was the best bit of information because it had a date on it. (Group6Boy1, Group6Girl1).
- HGtext6 was the most important info because it was about why the Home Guard was needed (Germans attacking)(Group6Girl2).
- HGtext4 about what the Home Guard defended was the best bit of information “because it tells you exactly what they did”. (Group2Boy1).
- Group6Girl2 thought they could have included information about whether the Home Guard had to wear the uniform every day,
- To improve it, they could have included a diagram about the different bits of the uniform (Group6Boy1).
- To improve it, they could have included a bit about their weapons and food (Group2Boy1).

- They could have included “why they wanted to become part of the Home Guard. Was it fun or because it was serious?” (Group6Girl1).
- They could have put information about why they wanted to help people and save their country (Group6Boy2).

Group 6 Sources used (RQ1, RQ3, RQ5):

- They had got a little bit of info from Wikipedia (Group6Boy1).
- They agreed that the majority of the printed writing and pictures came from the pre-printed sheets but that the hand-drawn medal had been copied by Group6Boy1 from an image in a schoolbook.
- They initially disagreed about where info had come from. Some believed more of it came from the Internet than was the case.

Group 6 Task success (RQ1, RQ5):

- They largely thought they had met the success criteria for the task.
- They awarded their poster scores of 9/10 (Group6Girl2, Group6Boy2), 10/10 (Group6Girl1, Group6Boy1).
- They all thought the teacher was happy with what they did and that it was one of the best posters (not top place) because of the colours they had included.
- They thought the pictures were good.
- Group6Girl1 said they had worked really hard as a team and did not do “any moaning or fuss”.
- Group6Boy1 said they had “got the job done”.
- Group6Boy2 said they “did very well because other groups were giggling and we just kept on”.
- Group6Boy2 thought they could have included more information.
- Group2Boy1 from the other group thought the Women’s Land Army poster he worked on was better as it had more info on it.

- They had not realised problems such as using the wrong badge on the poster and the lack of clarity about non-contemporary and fictional representations.

Group 6 Task enjoyment (RQ1, RQ5):

- This group did not say much that was specifically about their enjoyment of the task, though they certainly did not say anything negative about it nor did they seem reluctant to discuss it.

Group 6 Situational and contextual factors (RQ4):

- Nothing in particular was mentioned in relation to this factor.

Group 6 Summary

This presentation given by this group revealed several weaknesses in their engagement with the topic and also in their understanding of the job they had been asked to research. The poster was very attractive and used elaborate design incorporating appropriate colouring. However it did not feature enough information to explain what the job was and there were some big errors on the poster that revealed a lack of understanding of the information that they had included. While they had used information from the Internet on the poster they thought they had done this to a greater degree than was actually the case. Most info had come from the pre-printed sheets and at least one piece had been copied from a textbook provided for the task (this was partly confirmed by during-task observation). The interest in warfare and weaponry that was observed in other groups was also evident in this group and many of the elements of the poster were connected with weaponry rather than the function of the Home Guard. Indeed, this was shown to be a priority during the focus group. This group were good at reflecting on what had gone well and not so well (particularly when confronted with the mistakes that they had made) during the focus group. They all thought they had done the task really well and cited how well they had worked together and how hard as reasons why they thought this was the case. They also thought that artwork was an important requirement of

the task. In one of the interviews with the teacher, she acknowledged the difficulties that she had seen this group have in researching their poster and the comprehension issues that had led to so many errors on their poster. She also said that artwork was not a particularly important or specific requirement of the task.

Poster Task Overview of Group Task Performance

In this section I bring together the findings from all groups and give consideration to both the child perspective on the task and that of the teacher, with reference to each of the research questions.

The table below (Table 5.9) provides an overview of the quality of the posters versus how good children thought these were, alongside the teacher's perceptions of the quality of the posters, the children's ideas about how well they had performed as a group.

Child ID	Self-rating of Poster (out of 10)	Group average self-rating of Poster (out of 10)	Poster score out of 7 possible (based on task instructions)	Poster ranking according to teacher (where 1 is best 6 is least good)	No. of Amber ratings per group in traffic light evaluation
Group1Boy1	8				
Group1Girl1	9				
Group1Girl2	6				
Group1Boy2	8				
Group1Boy3	9	8.00	6.5	2	15
Group2Girl1	8				
Group2Boy1	not available				
Group2Girl2	not available				
Group2Boy2	8				
Group2Girl3	9	8.33	7	1	0
Group3Boy1	9.5				
Group3Girl1	6				
Group3Girl2	10				

Group3Girl3	6				
Group3Boy2	9	8.10	5.5	4	7
Group4Girl1	10				
Group4Boy1	not available				
Group4Girl2	7.5				
Group4Boy2	7				
Group4Boy3	8	8.13	6	3	9
Group5Boy1	6				
Group5Boy2	4				
Group5Boy3	6				
Group5Girl1	6				
Group5Girl2	6	5.60	4	6	7
Group6Girl1	10				
Group6Boy1	9				
Group6Boy2	9				
Group6Girl2	9	9.25	4.5	5	0

Table 5.9: Child Perspectives on Poster Task Quality, Task Performance vs. Task Guidelines and Teacher Perspectives

NB: a large number of Amber ratings indicates more dissatisfaction with performance in the task. Note also that these scores were corroborated by comments made in the focus groups in all cases as discussed earlier in this chapter. It can be seen from the table above that the groups that were doing best in terms of their adherence to the instructions and also in the eyes of their teacher i.e. Groups 1 and 2 were not always the groups that rated their poster highest nor were these groups necessarily the least self-critical of their group's performance of the task. An exception would be Group 5 who sensed that their Auxiliary Fire Service poster was weak and rated it accordingly (though interestingly they thought the teacher would rate it higher than they did-she did not). In contrast, Group 6 who had made a pretty weak poster in terms of the elements completed/completed well and also in the eyes of the teacher, rated their poster very highly and were not particularly critical of their performance of the task in the traffic light evaluation, awarding it all Green ratings and therefore no Amber ratings. In another contrast, Group 1 whose poster was almost certainly in the top two both in terms of the elements completed and also from the teacher's perspective, had given their poster a low rating

compared to all but one of the other posters and were also the most self-critical group in evaluating their task performance via the traffic light evaluation.

Poster Task Teacher Comments

While the teacher's perspective has been reported above in relation to the themes emerging in the children's data, there were some additional longer comments she made that I will report here. The teacher's comments about the task were drawn from the two interviews described in Chapter 3 Methodology. The interview schedules for these interviews may be found in Appendices 16 and 17.

Before the task, her expectation had been that they would be able to complete it and that there were resources available that would enable this:

...I thought beforehand that they would be able to do the task ok. I thought that by using links in the BBC site that they would be able to do it. (P7 Teacher)

Some children had indeed been seen looking at the BBC site and information had been copied from there but this had not been universal.

She thought that the children would or should have been well aware of the **task requirements (RQ1)**.

They should because this is how we begin all of our lessons (with criteria on PowerPoint intro slides for each lesson). (P7 Teacher)

and gave a further indication of what her own **perception of task requirements (RQ1)** had been:

What they need to do is evaluate what they have done after they have done it-have I done this, that. (P7 Teacher)

Despite what she thought were clear instructions, and in direct contradiction to how a majority of children felt about how the task had gone she said:

I don't think it went very well at all! (P7 Teacher)

Her reasons for describing the **task success (RQ1)** of the children as poor were largely linked to the children's reliance (or over reliance) on certain *sources (RQ3)*:

They did get there in the end with it but certainly for some kids, and this is the same for their homework topic too, they have just copied screeds from a website and I know which website it is. (Woodlands school website) (P7 Teacher)

and their lack of proper engagement with the material they found:

For the task where they had to create posters about jobs I was slightly disappointed with some of them because I felt that they had not understood the information that they had written on there.

This lack of proper processing of the material had been evident both in my observations of the task as the posters were made and as the presentations were given. Some children had copied information verbatim. The teacher's **perception of the task requirements (RQ1)** was that they should not be doing this at all and certainly not in large amounts.

Not the case for everyone but some had copied screeds, which they had been told not to do. (P7 Teacher)

Despite children's emphasis, both as observed during their completion of the task and in the feedback in the focus group sessions, producing artwork as part

of the task was not an important requirement per se, showing again that the teacher's **perception of task requirements** was at odds with children's. "Illustrations" rather than artwork were one of the elements in the task instructions.

<Was artwork an important part of the success criteria for this task?> Not particularly.... they have to when they present their information....if you look at the curriculum guidelines for where we want them to be at this level, they should be presenting their work but also that they should be able to illustrate their work with diagrams and things of interest which are all relevant so it's not about their art skills although some of them have fabulous art skills it's about the transference of those skills so obviously the fact that they can draw ...yes.. but they are using it for illustration purposes... but yeah they should be illustrating. (P7 Teacher)

So the children's **perception of the task requirements (RQ1)** with regard to illustration/artwork was at odds with that of the teacher and also with the requirements of the curriculum for this type of task.

The teacher thought that children had found the task difficult because of the challenges of understanding and using the information *sources (RQ3)* they found. Some of it was at a level that was too difficult to understand:

Text online was especially tough-some did not make sense of it at all.

But this was not universal:

I think probably the variety of (online) information that is available on that (WW2 topic) was too difficult for them to understand, some of them (children) not all of them.

The difficulty level of the text made it difficult to use which may explain why so much the information copied had been copied verbatim:

It's how they take that information and make it their own- I think that's what they are finding difficult.

Another aspect that affected the children's **task success** had been related to the jobs themselves and may explain why, despite carefully picked, mixed ability groups, some posters had been so weak compared to others.

Some of the jobs were kind of difficult for them to research.

<The Home Guard was a difficult job to research> and the Fire Service poster was also difficult to do.

The Women's Land Army poster was probably the most successful one. Women's Land Army was one where they were quite able to access it...again it depends on who and they were mixed ability groups. (P7 teacher)

Note that these were the most poorly done posters, and that while only one of these groups, Home Guard thought that they done the task really well, both of these groups said that they had found the searching difficult. She cited the difficulty level of some of the *sources* about some of the jobs in particular:

The text yes, especially the stuff from the Internet on that (particular jobs). I can't remember but there was a couple (of jobs) that they just did not make much sense of at all. (P7 Teacher)

Where there had been what she regarded as good **task success**, despite some conflicts about resource availability, children had organised themselves to work in a variety of *roles* in sub-teams of pairs without interference from the teacher

and that those with weaker skills, for example in online searching, had been helped by others who were stronger in that area.

I think they often argue about whose turn it is! But I do think that they tried to work in pairs for that task and that some of them did try to help each other along the way. Some have better searching skills than others, so that helps them to do it better.

Regarding **task enjoyment**, the teacher acknowledged that the children who had been assigned the Munitions Worker poster had been envied by others in the class as it was seen as an attractive job and they had wanted the topic as a whole to be more about conflict than what they saw as more mundane domestic matters.

Yeah I know (a few of them are into guns) and they are always tempted when you ask them to do their front cover for the topic it was the same last year to put bombs and guns and all that kinds of thing. (P7 Teacher)

She also acknowledged that for some children, the main **task enjoyment** had been about getting the chance to use a computer. This was borne out by my observations and from comments in the focus groups, particularly from boys.

The task had encouraged organisation of the work within a group to an extent but this had not always succeeded despite group working being part of the ethos of the class.

*“Some (worked in groups) better than others. Group work is something that this school places emphasis on to prepare children for high school ...and so since last year there has been a particular emphasis placed on it.”
(P7 Teacher)*

Designing a task to encourage collaboration had not always been enough to overcome the difficulties the children had with it:

“It’s how they take that information and make it their own- I think that’s what they are finding difficult. It varies across class-some kids have much lower reading level than others but it’s about trying to get everyone to access the info in some way, which is the idea behind group working, and the idea of teacher support. Pinpointing those who struggle and pushing those who are doing well.” (P7 Teacher)

Taking part in the task had encouraged children’s autonomy. For example, it allowed those who enjoyed the technology aspect to focus on that. This did not however necessarily lead to better task outcomes:

“They love using the computers. I think they are possibly more enthusiastic when it is their turn to use the computer.... However, they find it difficult to search for exactly what they are looking for.

The teacher also said that she would consider setting this task rather later in the topic next time once they had had a chance to learn a bit more about wartime jobs during the task carousels given how poorly she thought it had gone. She said that she would be writing this into her evaluation of the topic.

Poster Task Summary

The summary of this section is arranged in accordance with the analysis factors described in Chapter 3 Methodology and the relevant research questions for each finding are also cited.

Completion rate (RQ1)

- Only two of the six groups had completed all of the required elements and adhered to all of the guidelines for the task. Three

groups had missed at least one of the elements and four groups had not adhered to at least one of the guidelines. The most common issue with posters was that they did not include Equipment for the job or information had been included that was not relevant or was incorrect in some way.

Perception of task requirements (RQ1, RQ5)

- Children had various perceptions as to the purpose of the poster. Bearing in mind that the teacher had not, in her instructions, mentioned a purpose, it is interesting to note that while three groups thought they were making the poster in order to learn more as a group about the topic, three (with some overlap) thought their poster was (wholly or partly) for informing others in the class about the topic. A few children thought the poster would help to find a person to do the job i.e. as an advertisement (which is indeed how the task was described on one version of the topic planner, which children would not have had access to).
- The majority of children seemed keen to display more than one skill in carrying out the task, and all groups mentioned the importance of good design and team working (but less about the searching and finding of information). In most groups it seemed that designing, drawing and colouring the Title was taken as seriously and given as much attention and care as carrying out the information seeking aspects of the task indicating that these were regarded as key task requirements.
- All groups had followed the teacher's instructions regarding the roles they should assume to some extent. In general, two children in each group acted as Reader and Recorder (one of each) at the computer, one or two acted as Designer at the table and almost all took a turn at being Presenter. This indicates that they had taken the role requirement of the task seriously.

- There was a gender split in the roles undertaken, with boys tending to take on the Reader and Recorder roles to perform online searches. This appeared to be due to enthusiasm for getting the chance to use a computer. Girls tended to be based at the table as Designers, often paired with another girl, or with the occasional boy. It was unclear how these roles were negotiated but this dynamic was observed to be common to most groups. Designers were typically working with pre-printed material and books as well as completing the design aspects with drawing implements.
- Occasionally, groups mentioned roles they had taken on that were different, in name at least, from the ones the teacher mentioned e.g. Group 6 mentioned a Timekeeper, Artists, and Researchers. It was unclear how or why this had occurred, but there was nothing about their poster that suggested they had approached the task in a way that was appreciably different from the other groups and it underlined again that children had taken seriously the teacher's instruction to adopt different roles for performing the task.
- There was no sense in any group that any child had ended up in a role they had not wanted, only disappointment sometimes that they had not succeeded as well as they wanted to in that role. The pride shown in explaining the roles taken, was evidence that having performed the role, perhaps having had that particular responsibility, was regarded by children as a success in itself.
- Working as team was regarded as being very important. Most of the groups mentioned this. Some groups had clearly worked together better than others and children alluded to how much better their group had or had not worked together compared with other groups. The groups that said they had worked well together had not necessarily produced the best posters and vice versa.

- In focus groups, the majority felt they had met the requirements for the task even though some said they had not worked as hard as they could have.
- In the focus groups, many were at pains to point out how hard they had worked and some were equally willing to volunteer that they had been lazy or distracted, perhaps in a way that they would not have admitted to the teacher (which arguably demonstrates the effectiveness of the research approach taken).

Task success (RQ1)

- The posters that contained all of the required elements i.e. ARP Warden and Women's Land Army, were also the posters for which the teacher had highest regard. By contrast, children had highest regard for the Munitions Worker poster and the Home Guard poster, both of which had several deficiencies in terms of the elements included and adherence to guidelines. These were also the two weakest posters according to the teacher.
- What was arguably the weakest or second weakest poster in terms of the information elements included (Home Guard), was the poster that was most highly regarded both by the group who made it and by other children in the class, not, of course, by the teacher.
- Other groups gave the Home Guard poster's layout, title design and use of colour as reasons for choosing it as the best or 2nd best poster. In the case of the Munitions Worker poster, the weaponry aspect of the job was the key reason as to why this poster was favoured by children in the class. There was an element of this in the favourability of the Home Guard poster also.
- There was a strong sense of the comparative quality of the posters and children were keen to rank their own against those of others, even when they had not explicitly been asked to. Certain

posters were regarded as “cool” or “wow” by the children (Munitions Workers and Home Guard in particular) and there was a sense that the best posters had design elements that made them “stand out” from the rest. The teacher had not explicitly asked them to reflect in this way but the very acts of presenting then displaying the posters had inevitably led to this comparative evaluation happening.

- The presentations did not seem to have influenced children’s perceptions as to the quality of posters; indeed the weaker posters i.e. the highly favoured ones had been presented in what turned out to be the weakest presentations.
- It is immediately visually apparent that a few groups had expended a great deal of effort on designing and drawing the Title, even if they had not completed it (e.g. Auxiliary Fire Service). In addition, several posters have titles and layout that demonstrate the group’s perception of the topic e.g. ‘camouflage’ colouring has been used for the Home Guard, ‘explosion’ clouds house the information on the ARP Warden poster and, on the Munitions Worker poster, information is contained within text boxes shaped like army tanks. Children valued these elaborate design elements both in their own posters and those of others, but the teacher regarded them as less than central to success in the task.
- Some children were keen to draw pictures rather than paste them from the printed materials as they thought it was a chance to show off their artwork. This, for them was an important requirement of the task. The teacher disagreed and said that while illustrating their work was an explicit requirement in this and other tasks at this stage of development, the emphasis on artistry was one that had come from the children rather than from her, and elaborate designs were not required.

- There was acknowledgement from a few groups that they could have done a better job, particularly once they had seen the posters of other groups displayed on the classroom wall.
- They did not believe that they were in competition with other groups but there was some recognition that other groups had done things that were better/worse, as well as disappointment that they had not worked harder to produce something as good as the best. No copying or information sharing was identified between any of the groups during observation and none was mentioned in the focus groups or by the teacher.

How information was searched for (RQ3, RQ5)

- As we have already seen, searches online were largely carried out in pairs, mostly, though not exclusively, by boys, though there was always a boy present in each searching pair in each group.
- The searching pairs worked in a Reader/Recorder dynamic with one child performing the searches and the other making notes about what they found. I observed that there was far more time taken up by searching and very little by note taking. Very few notes were made given the effort expended and time taken.
- Despite much effort put into finding images online, no images were copied from the web. The lack of printing facilities meant that copying by hand would have been the only means by which any images found online would have made it onto the posters but this did not occur in any of the groups, despite the focus on searching for images.
- None of the groups observed was observed using Google image search, only general searches in Google or the browser bar were observed.
- Queries tended to be keyword searches of type 'Munitions Workers' or Women's Land Army' using no search operators.

- While I had not observed many obvious instances of explicit difficulty with vocabulary while children carried out the task, one group did say they had used Google dictionary in order to understand what they were searching and finding. There were also a few occasions in the focus groups where children seemed unsure of the meaning of words on the posters they had created, and often struggled to pronounce them due to unfamiliarity, which is evidence for **RQ2** of the support required to do a task like this. It also raises questions as to how well children had understood information before adding it.
- A few children said they had found searching online difficult. This was said to be partly due to the need to go to multiple websites in order to find the information required and also to the limited time they had to use the computers before coming back to help assemble the poster. The teacher, however, thought that they should have been able to complete the task via the BBC website alone, even without the materials she had provided.
- Children very quickly found a web resource that had been created for schools called the Woodlands School website. This website was the top hit in Google for many of the queries that the children used, and I observed some children copying textual information from this site by hand, word for word. Other children were observed reading information on the BBC website. Groups had also been observed copying information from Wikipedia and indeed named both Woodlands and the BBC during the focus groups. They did not recall looking at any other websites though they had been observed to do so. The teacher said there had been an over-reliance on information from Woodlands.
- Children had also been seen to find but then dismiss information on a local history website (they showed no awareness that it was a local source), without exploring beyond the first page. There was in fact a plethora of relevant information there that they

might have used, but because of a lack of immediacy, they tried other searches instead.

- A few groups had noticed after returning to the table after their online searching that the information they found online was often the same or very similar to the pre-printed information the teacher had given them and this had been frustrating given their desire to find more information for the poster.

Sources Used (RQ3)

- Approximately 60% of the textual information on the posters came from the printed sheets, whether it had been cut out and stuck on, or copied and handwritten on to the poster. 20% came from notes copied from the Internet, 10% from the topic books provided and 10% from children's existing knowledge.
- By necessity, 100% of the photos and non-hand-drawn images on the posters came from the pre-printed sheets. If a suitable image could not be found, a drawing was sometimes done instead, though some drawings had been copied from books (but not Internet).
- Posters were generally created in the order: title created first (while others were at the computer searching), then pictures from the pre-printed sheets were added along with hand-drawn images, followed by Internet information, then text from the printed information sheets. The latter information was often added in a rush and the teacher confirmed that a few posters had the appearance of being rushed, unfinished or both. In every group, title and images were prioritised over text in terms of what had to be done first.
- In focus groups, groups often had difficulty confirming where they had found info and often could not agree with each other about its origins. They tended to overestimate how much came from the

web and underestimate how much came from the pre-printed sheets.

- A few children were observed adding small amounts of book information to their posters. They often seemed not to read this information properly e.g. a child from Group 6 Home Guard was seen finding an image of a badge in a book and drawing it on the Home Guard poster despite the image being a badge for the National Fire Service with abbreviation NFS. None of the other members of the group noticed this error at the time.
- The small number of information segments from children's existing knowledge of the topic was largely, they said, information encountered in the early weeks of the topic. These information segments were invariably very short texts describing the job in what they considered to be precise terms, and were, from my point of view also, largely successful.
- Some children did try their best to use offline information e.g. I observed members of a group at the beginning of the activity going straight to the local authority resource box. They found a book that they discarded fairly quickly and looked instead through a large pack of replica artefacts. They appeared to have fun looking through the box but it wasn't clear that they found any information there that they thought useful. None was evident on their poster and these resources were not mentioned during focus groups.
- The majority of information segments taken from the web were copied verbatim by hand. A few groups mentioned putting things in their own words but it was not a strong feature, either of their performance, nor of what appeared to be their perception of the task requirements. Several of the groups had taken information from the pre-printed sheets and rewritten it by hand also without rewording: a duplication of effort in an attempt to produce original work.

- Several posters appeared to be heavily reliant on using the pre-printed Internet-sourced materials that the teacher had provided for them. It was observed on several occasions that children were often not reading the pre-printed sources properly before cutting out information from them and pasting it on, or copying it from the sheets on to their posters. In focus groups they underestimated how much of their info had come from this source.
- Much of the information that had been copied verbatim was revealed as poorly understood during the presentations and focus groups, regardless of its origins. The teacher acknowledged that this was a big issue with the task, even though she had often cautioned them against doing this in the time she had been teaching them.

How information was selected (RQ1, RQ3)

- The comments that children made about why they had chosen certain pieces of information were far more detailed when they were talking about the images than when they were talking about the textual information. This could be an effect of the evaluation methods used or it could be that they had engaged more with the images than was the case with the text, certainly they had tended to add the images before they added the text and spent a lot of time and effort looking for them in many cases.
- In several instances children said that poorly regarded (in terms of aesthetics rather than relevance to the task) images had been added simply because nothing else could be found. They also said that images were often chosen because they looked good even if their content was not properly understood.
- One group said that they knew they could “fall back on” hand-drawn images if they could not find anything else that met their

needs. There was a view that such an image might be inferior because of the reduced detail afforded by drawing by hand.

- On the other hand, a few children suggested that a picture might sometimes be of more use than text and that this was why they had chosen to include images in some cases.
- The most serious weaknesses on the posters related to the images used. It was clear in several groups that none of the children in the group were aware of the problems until they were pointed out, so something was clearly going wrong in the selection process from time to time. The main reaction to being alerted to these types of issue was one of mild surprise rather than embarrassment, and a recognition that they hadn't read text properly. Images added incorrectly were more difficult for them to explain.
- The pieces of information that children said were the best tended to be either: a short sentence that encapsulated the job description or, conversely, the lengthiest piece of information on the poster, regardless of subject. They were good at suggesting what types of information might be missing e.g. how much people were paid for doing the job.
- All groups thought their posters had 'enough' information even if they said they all thought they could have improved the poster by adding more textual information to it. They were more concerned with filling in blank space so the poster looked less empty, than anything else, and adding more information was a way to do it. This may have led to info being selected that was not particularly appropriate.
- The selection of information was sometimes a challenge due to issues of comprehension around geographical and temporal aspects of online information seeking. For example children searching online were seen to dismiss potentially useful information that they found because it specifically referred to

Wales and they either did not know or did not think it was relevant to the task. They were also challenged by modern day stories about wartime efforts and whether or not these would be relevant. I had the sense that they were not always sure which information had been created now and which at the time of the events.

Task enjoyment (RQ1, RQ5)

- The task was enjoyed by the majority of children, with much of the enjoyment for some coming from the chance to do some creative design/artwork with the role of Designer being the most favoured of all the roles. This was particularly the case with girls.
- For boys in particular, enjoyment came from the chance to use a computer. The teacher acknowledged that she had noticed this to be the case with this and other tasks, regardless of topic.
- Some said they enjoyed the task because they had known nothing about the topic before and it was regarded as more fun than most of the other topic tasks they had done so far, but not as much fun as practical tasks such as making gas masks and planting seeds.
- Several children thought they would have enjoyed the task more had they done the Munitions Worker poster as it was about weapons and fitted in more with their idea about what the WW2 topic was about. It is not clear whether the appearance of the Munitions Worker poster led to it being perceived as the most interesting or easy topic or whether this was a view held previously. However many children mentioned an interest in guns during this and other task evaluations which suggests it was a view held previously, at least by some. The teacher noted that previous classes had expressed similar interests.
- Children in several groups mentioned that they were disappointed and rather demotivated that there had not been

more about the conflict as part of the topic so far. The teacher acknowledged this disappointment but added that it was not regarded as appropriate for such elements to be covered at their stage of learning. (Cf. KWL results later in this chapter).

Situational/contextual factors (RQ4)

- The lack of printing facilities led to a lot of time being expended on searching for images that could not then be used.
- There was a lot of duplication of effort because children were often finding exactly the same information sources online that the teacher had already provided for them in the form of the pre-printed sheets.
- There were no specific issues with connectivity or technology malfunction during the poster making task
- All groups thought that the time allowed for the task was not enough to complete the task in the way that they wanted to, often citing the need for time to allow them to fill in blank spaces with more textual information and finish design elements such as title.

Section 2: Astro7 Task

Introduction

In this section the findings of the **Astro7** Task carried out by the **P5** class will be presented. The section begins with a quick recap of the task outline and the tools used to evaluate the task. It continues with some general observations about the task and how it proceeded before continuing with a group-by-group discussion of the findings per research method used. Within the group findings,

individual aspects of the children's performance of the task will also be discussed. At the close of the chapter a summary of the findings will be made.

Task Criteria and Guidelines

This task was one of six in a carousel of activities in a topic called The Solar System. This task is outlined full in Chapter 4. The other six tasks on this topic are described in full in Chapter 4.

The class was arranged in six groups of 3-4 children called Group A, B, C, D, E and F. When it was their scheduled week to do the task, each group was given a task sheet, one per group, with the following information:

- Task: You have to create a fact file about a famous astronaut.
- Choose one of the astronauts you have been given information about and create a fact file about them.
- Try to include information about their: Name, Date of birth, Date of death: (if they have died), Place of birth/Place they are from, Achievements: (what did they do which makes them a famous astronaut), Other information: (any other information which you think is interesting).

They were given the following additional instructions:

- Do this fact file in your jotter*.
- You should decide what the title should be and how you want to set it out.
- You should also draw a picture of the astronaut and colour it in if you have time.

- Remember to write the small date and use your best writing.

*NB: this instruction was changed just before the task commenced and the children were given craft paper with which to make the fact file and were told to use either note paper or their jotters to make notes in while doing their research and then to transfer this to the fact file.

Each group was also given the same set of five factsheets, each one with some short information statements about different astronauts headlined “Quick Facts”. They had access to 3 laptop computers, a selection of topic books and were free to use any of the other topic resources around the classroom. The task was undertaken in a period of around 60 minutes per group. As groups worked on this task, the other five groups were engaged in one of the other activities in the task carousel. By the end of the third week on this topic, all six groups had completed the task (NB there were two topic sessions in each week).

The teacher singled it out from the other tasks in the Solar System topic when she was introducing the topic, spending longer introducing it than the other tasks cf. the long intro given by the **P7** teacher to the **Poster Task**. Before the first group of children were allowed to begin their searching she spent 10 minutes with the class discussing the format in which the information found was to be presented.

Methodology

The methodology undertaken to evaluate this task is outlined in full in Chapter 3 Methodology however I will briefly recap it here:

- **Observations** (non-participatory) were made of the groups as they carried out their task and also as the teacher outlined the task to them.
- A short **questionnaire** was employed with each group (Appendix 3) that consisted of pre and post-task questions.
- An **artefact analysis** of the fact files produced was undertaken.
- A **focus group** was held with each group (in a similar manner to that described for the Poster Task earlier in this chapter) with children being encouraged to discuss the content of their fact files and experience of the task. An interview schedule for the focus groups is at Appendix 7.
- An inspection of **self-assessment sheets** in which children wrote about their feelings as to how well they had done the task.
- An inspection of the **traffic light evaluation** part of each child's self-assessment sheet.
- **Teacher comments on the self-assessment sheet** were examined: with a "star" for positive comments and a "wish" for improvements to be made.

NB Attention was paid to when the children completed this task given that one group completed it on the day when the topic was introduced and the others up to three weeks after that first introduction. This will be recorded as situational and contextual factors that inform **RQ4**.

21/22 of the children in this class gave their consent to take part in the study. The one child who did not give her consent was the sister of a child in the **P7** class so it seems that the choice not to participate was a personal one, and probably not influenced by the parents of the child. The researcher was able to observe 5/6 of the groups as they completed their task, making notes as she did so and was also able to employ the interview questionnaire with the same 5 groups immediately pre and post-task. This equated to 17 children being

observed and 17 being involved in answering the questionnaire questions. 19/21 fact files were gathered and the contents analysed. 6/6 groups took part in focus groups minus a few members who were absent due to sickness or being involved in other activities elsewhere in school. This equated to 19/21 children. I obtained self-assessment sheets, and traffic light ratings from 19/21 children, written comments from 20/21 children and teacher comments for 15/21 children. NB at the time of collecting the self-assessment sheets the teacher had yet to provide assessments for two of the groups. The assessments were not easily obtained due to the impending end of term. Table 5.10 below illustrates the availability of data for the task.

GROUP	Child ID	M/F	Week	Astronaut	Observation	Questionnaire	Fact file	Focus group	Traffic light	Child written comment	Teacher comment	Total (of 8)
A	Group ABoy1	M	1	Neil A	y	y	y	y	y	y	y	8
A	Group ABoy2	M	1	John G	y	y	y	y	y	y	y	8
A	Group AGirl1	F	1	Buzz A	y	y	y	y	y	y	y	8
B	GroupB Girl1	F	2	John G	***	***	y	y	y	y	y	6
B	GroupB Boy1	M	2	Buzz A	***	***	y	y	y	y	y	6
B	GroupB Girl2	F	2	James L	***	***	y	y	y	y	y	6
B	GroupB Girl3	F	2	Neil A	***	***	y	y	y	y	y	6
C	GroupC Girl1	F	5	James L	y	y	y	***	***	y	***	4
C	GroupC Boy1	M	5	Buzz A	y	y	y	y	***	***	***	4
D	Group DGirl1	F	4	Buzz A	y	y	y	y	y	y	***	7
D	Group DGirl2	F	4	Sally R	y	y	y	y	y	y	***	7
D	Group DBoy1	M	4	Neil A	y	y	y	y	y	y	***	7
D	Group DGirl3	F	4	James L	y	y	y	y	y	y	***	7
E	GroupE Boy1	M	3	Neil A	y	y	y	y	y	y	y	8
E	GroupE Boy2	M	3	Buzz A	y	y	y	y	y	y	y	8
E	GroupE Girl1	F	3	James L	y	y	***	***	y	y	y	6

E	GroupE Girl2	F	3	Sally R	y	y	y	y	y	y	y	8
F	GroupF Girl1	F	2	Neil A	y	y	y	y	y	y	y	8
F	GroupF Boy1	M	2	Buzz A	y	y	***	y	y	y	y	7
F	GroupF Boy2	M	2	John G	y	y	y	y	y	y	y	8
F	GroupF Girl2	F	2	James L	y	y	y	y	y	y	y	8
Total no of children for whom this data was collected (of 21):					17	17	19	19	19	20	15	

Table 5.10: Data Collected During Astro7 Task

It can be seen from this table that for a majority of children who took part in the study, between 6 and 8 of the 8 research tools were employed and that between 15 and 20 child/teacher responses were recorded for each research tool, ensuring good coverage of individual performance, experience and evaluation of the task.

One of the most important things to say about this table is that where results are reported for a group or for the class as a whole, these are based on the data that was available, so I have been very careful when calculating averages and totals for example to bear in mind the coverage of the class that this applies to. The missing data means that there will be occasions in the reporting where it seems like children are missing from the analysis e.g. the class size may appear to shrink from 21 to 19 or even lower but I hope that the results will be understood nonetheless.

Task Completion (RQ1, RQ5)

Six children chose to do the task on Buzz Aldrin, five on Neil Armstrong, four on James Lovell, three on John Glenn and two on Sally Ride. In every group, each child chose a different astronaut from the others in the group. Four of the girls had chosen James Lovell where none of the boys had. Both children who chose to make their fact file about Sally Ride, the only female astronaut available, were girls. Boys had tended to choose the (arguably) better-known astronauts, Armstrong and Aldrin. The findings are summarised in Table 5.11 below.

	Buzz Aldrin	Neil Armstrong	John Glenn	James Lovell	Sally Ride
Girls	2	2	1	4	2
Boys	4	3	2	0	0
Total	6	5	3	4	2

Table 5.11: Chosen Astronaut

When the 19 available fact files were analysed it was found that as far as the task outline was concerned the following elements had been completed, as seen in Table 5.12 below:

	Total	Total %	Boys	Boys %	Girls	Girls %
Name	18/19	94.7%	7/8	87.5%	11/11	100.0%
Date of birth	19/19	100.0%	8/8	100.0%	11/11	100.0%
Date of death (age if still alive)*	8/19	42.1%	1/8	12.5%	7/11	63.6%
Place of birth	6/19	31.6%	1/8	12.5%	5/11	45.5%
Achievements	17/19	89.5%	7/8	87.5%	10/11	90.9%
Other Information	17/19	89.5%	7/8	87.5%	10/11	90.9%
Title	19/19	100.0%	8/8	100.0%	11/11	100.0%
Picture of astronaut	1/19	5.3%	0/8	0.0%	1/11	9.1%
Use the small date	0/19	0.0%	0/8	0.0%	0/11	0.0%
Use your best writing	15/19	78.9%	5/8	62.5%	10/11	90.9%

Table 5.12: Fact File Completion

*all astronauts were alive at the time of the task. Children were marked as having completed this requirement if they had said the astronaut was alive or had stated the astronaut's current age.

It can be seen from Table 5.12 above that while elements such as Name, Date of Birth, Achievements, Other Information, Title and Best writing had been completed by the vast majority of the children, elements such as Date of death (age) and Place of birth had not been completed in most cases. Almost all children had ignored the requirement to include a drawing of their astronaut (though many had drawn other items related to the Solar System topic as we will see in the group-by-group analysis). None of the children had followed the instructions regarding the “small date”. Girls generally completed more of the required elements than boys.

In respect of **RQ5**, there did seem to be gender differences for some of the elements, with girls much more likely to have completed the Date of death (age) element (63.6% vs. 12.5%) and the Place of birth (45.5% vs. 12.5%). Girls were also more likely to have fulfilled the requirement for neat writing (90.9% vs. 62.5%).

In what follows I examine this data by considering how many of the elements had been completed by each child for whom a fact file was available. Table 5.13 below provides an overview of the elements that had been completed.

No. of completed elements	5	6	7	8	9	10
Girls	1	2	6	2	0	0
Boys	4	4	0	0	0	0
Total	5	6	6	2	0	0

Table 5.13: Total Number of Elements Completed

All children had completed five or more elements of the ten required. With regard to **RQ5** can be seen from this table that girls tended to be completing higher numbers of elements of the task than the boys were.

The average number of elements completed for girls was 6.8 (stdev=0.88) vs. boys with 5.5 (stdev=0.53). A quick examination of these statistics per group revealed average numbers of elements completed ranging from 6 (Group3) to 6.5 (Group4) showing that the groups, at least on this measure were not very different from each other.

Other Information (any other information which you think is interesting):

Only two children had written no information beyond the astronaut's main achievement. On average children had included 4.05 additional pieces of Other Information about their astronaut, with girls including on average 4 pieces of Other Information and boys 4.13 pieces.

You should decide what the title should be and how you want to set it out:

12/19 children had made the astronaut's name the main title while 4 had chosen to use the name plus subtitles such as "Quick facts" "Missions", "Personality".

You should also draw a picture of the astronaut and colour it in if you have time. Only 1 child had chosen to draw the astronaut. 4 drew a rocket, 3 drew the moon or moons, 2 drew a planet or planets, and 12 included no drawings at all.

Remember to write the small date and use your best writing. None of the children had used the small (or short) date format (dd/mm/yyyy) when writing dates in their fact files and this appeared to be due to their having copied these verbatim from either the fact sheets or from web or book sources, where the dates were written in a longer format. With a few exceptions, all of the fact files were written in what might be considered neat cursive handwriting. Those that were not seemed to have suffered the effects of poorly chosen writing implements e.g. thick felt tipped pens. In any case, the teacher had not made any negative (or indeed positive) remarks about the date formats and or handwriting in any of her comments to the children on the assessment sheets.

To see whether the choice of astronaut influenced how well the task had been completed, a quick analysis was done. The findings are shown in table 5.14 below.

NB “No.” indicates the number of children who chose to research this astronaut and “%” indicates the rate of completion of the element e.g. Name.

	Buzz Aldrin		Neil Armstrong		John Glenn		James Lovell		Sally Ride	
	No.	%	No.	%	No.	%	No.	%	No.	%
Name	5	100%	4	80%	3	100%	4	100%	2	100%
Date of birth	5	100%	5	100%	3	100%	4	100%	2	100%
Date of death (age if still alive)	2	40%	2	40%	0	0%	2	50%	2	100%
Place of birth	2	40%	1	20%	1	33%	1	25%	1	50%
Achievements	5	100%	5	100%	2	67%	2	50%	2	100%
Other information	4	80%	4	80%	3	100%	4	100%	2	100%
Title	4	80%	4	80%	3	100%	4	100%	2	100%
Astronaut Picture	0	0%	1	20%	0	0%	0	0%	0	0%
Use the small date	0	0%	0	0%	0	0%	0	0%	0	0%
Use your best writing	4	80%	4	80%	3	100%	4	100%	1	50%

Table 5.14: Task Completion by Astronaut

I conclude that from this analysis that choice of astronaut did not have a big influence on which elements were completed, though John Glenn’s scores look slightly poorer on average than the others and Sally Ride’s better. The small numbers involved may be making any differences seem more significant than they really are.

I was also interested to know whether there had been a gender effect on how well the best-known astronauts' fact files had been completed. The two girls who had completed a fact file on Neil Armstrong (GroupBGirl3, GroupFGirl1) and whose fact file completion rate was known in both cases, had completed 8 and 6 elements of the fact file respectively, an average of 7, which is very slightly above the average completion for girls of 6.8 reported earlier in this chapter. The two girls (GroupAGirl1, GroupDGirl1) who completed a fact file on Buzz Aldrin and whose completion rate was known in both cases, had completed 8 and 7 elements of the fact file respectively giving an average of 7.5/10 elements completed, again higher than the average of 6.8, but numbers are small making this comparison a not wholly convincing one.

The three boys who had completed a fact file on Neil Armstrong (GroupABoy1, GroupDBoy1, GroupEBoy1) and whose fact file completion rate was known (one further boy had not made his fact file available), had completed 5, 5 and 6 elements of the fact file respectively, an average of 5.33, which is very slightly below the average completion for boys of 5.5/10 reported earlier in this chapter. The three boys (GroupBBoy1, GroupCBoy1, GroupEBoy2) who completed a fact file on Buzz Aldrin had completed 6.5 and 5.5 elements of the fact file respectively giving an average of 5.5/10 elements completed, entirely in line with the boys' average of 5.5, but again numbers are small. In any case, it is not clear to me that the combination of gender and astronaut choice had a significant effect, if any on task performance.

A similar analysis was performed on how children who had chosen the most well known astronauts had rated their own fact files (discussed in more detail in the focus groups). Those who had chosen Neil Armstrong or Buzz Aldrin had on average rated their fact files 7.6/10 in comparison with the average self-rating of 6.61/10. The figure for girls was 7/10 (average 6.4) and for boys 8/10 (average 6.8) so it might be concluded that even if the well-known astronauts

did not lead to better quality fact files being created, children creating those fact files had rated them higher than children had rated their fact files on average.

Staying with a view of the class's performance of the task overall, Table 5.15 below shows the findings of the traffic light evaluation. NB not all children had completed this.

Traffic light colour	Green	Green/ Amber	Amber	Red
Girls	1	0	8	2
Boys	4	1	4	0
Total	5	1	12	2

Table 5.15: Traffic Light Feedback

These findings indicate that children thought they had performed well in the task with boys rating themselves slightly higher (**RQ5**).

The findings of the questionnaire (pre and post-task) will be reported in some detail in the group-by-group discussion later in this section but for the moment I provide a brief overview of the findings to give a sense of how the task was perceived by the class as a whole. Table 5.16 below shows the findings of the scalar pre-task questions and reveals that children thought the task would be quite hard and that they had at least some existing information to draw on.

Pre-task questions	Result	Comments
How easy do you think this task is?	quite hard	little variation
How much information do you have already that will help you with this task?	in the middle	little variation

Table 5.16: Astro7 Task Pre-task Questionnaire Feedback

Table 5.17 below shows the findings of the scalar post-task questions.

Post-task questions	Result	Comments
How easy did you find it to do the task?	Neither easy nor hard	Little variation in opinion in the class
How quickly did you manage to do the task?	Neither quickly nor slowly	Little variation in opinion in the class
How well do you think you worked with others in the group?	In the middle- quite well	One “not well at all”
How interesting did you find the topic?	Quite interesting	2 “not interesting”
How easy was it to find information?	Neither easy nor hard	Little variation in opinion in the class
How happy are you with the work your group produced?	Quite happy	One “very happy”
How happy are you with the work you did yourself?	Neither happy nor unhappy	One “very unhappy”

Table 5.17: Astro7 Task Post-task Questionnaire Feedback

It can be seen from the table above that according to their answers to the questionnaire questions at least, children had found the topic quite interesting, with few exceptions, and were quite happy with the work they had done as a group. They thought they had worked quite well with others in their group. On all the other measures they were neutral: easiness of the task, time taken to do it, ease of finding information.

In what follows, I report on findings obtained via artefact analysis, questionnaires, observations and focus groups, on a group-by-group basis.

Group A

There were three children in this group and all participated in the study including the focus group. Note that due to a timing issue, the pre-task questionnaire could not be used with this group.

Group A Completion rate (RQ1, RQ5)

Fact files from all 3 members of this group were available for analysis. Table 5.18 below shows what was found.

Group A fact files	GroupABoy1	GroupABoy2	GroupAGirl 1
Chosen Astronaut	Neil Armstrong	John Glenn	Buzz Aldrin
Name	no	yes	yes
Date of birth	yes	yes	yes
Date of death (age if still alive)	yes	no	yes
Place of birth	no	no	yes
Achievements	First on the moon	First American in space	Second person on the moon
Other information	5 good facts	8 good facts	6 good facts
Decide what the title should be and how you want to set it out	No main title Subtitles: "Missions" "Personality" Use of bullet points	Astronaut's name No design	Astronaut's name Colour design Use of bullet points
Draw a picture of the astronaut and colour it in if you have time	No pictures	No pictures	No astronaut Earth+ moon with text on each
Use the small date	no	no	no
Use your best writing	yes	yes	yes
No. of completed elements (of 10)	5	6	8

Table 5.18: Group A Fact File Contents

None of the children in this group fulfilled all of the criteria. All had missed the use of the small date and the drawing of the astronaut and each of the boys had missed 2 items. One boy had provided no title. The fact files produced by this group were very different in style from each other, that of GroupAGirl1 being far more colourful and decorated than those of the boys and only GroupABoy1 used subtitles for his additional information. Perhaps the only thing that they had in common was the choice of landscape orientation and the use by each of three panels or columns. GroupAGirl1's inclusion of a design and images appears to be linked to her finishing the task more quickly than the boys. Her fact file had very little blank space on it, whereas theirs was 1/3 empty in both cases. All children had produced a fact file that was reasonably neatly organised though GroupABoy2's was pretty unstructured.

Group A Choice of Astronaut (RQ1, RQ5)

Focus group:

- GroupABoy1, said he chose Neil Armstrong because he knew about him before, and knew he was first on the moon.
- GroupABoy2, who chose John Glenn, said that he did not know about him before and had chosen him for that reason.
- GroupAGirl1 gave no reason as to why she had chosen Buzz Aldrin.

Group A Perception of task requirements (RQ1, RQ5)

Focus group:

- They thought the fact file was to show other people what they had done and it was for other children doing the same topic or people who did not know about astronauts who did not want to read a lot.
- They were keen to put information into their own words. They did not think this was difficult to do and gave examples of how to do it.

- They were critical of fact files that did not have clear writing (not their own-all had done this well).
- They praised fact files with cover designs and a lot of information even if theirs did not match up to this.

Group A How information was searched for (RQ1, RQ3, RQ5)

During-task observation:

- Done separately from one another on 3 different laptops, seated side by side. They did not communicate much while performing the task, neither while searching nor while creating the fact file.

Post-task questionnaire:

- GroupABoy2: it was “quite easy” to find information “I just Googled John Glenn”. (But artefact analysis confirmed that he had failed to include two of the key facts)

Group A Sources used (RQ1, RQ3, RQ5)

Focus group:

- They thought that between a quarter and half of the info on their fact files had come from the fact sheets the teacher had given them.
- GroupABoy1 and GroupAGirl1 said they had got most of the information “from the laptop”.
- GroupABoy1 had got some of it from “my brain as well” and found the information on the factsheets too limited.
- GroupABoy1 had also given information to GroupAGirl1 (inspection of her fact file revealed that she had done rather better than him)
- GroupAGirl1 thought the factsheet info made things easy and that you “could just copy and reword them”.
- GroupABoy2 had used books and thought the books were a good check for information online that might be false and said he used

books because “I don’t really like to get information from the laptops, cos the laptops sometimes don’t tell you the truth because people can just be putting on any website”.

- GroupAGirl1 said “15%” of information online wasn’t the truth.

Group A How information was selected (RQ1, RQ3, RQ5):

Focus group:

- It was difficult to get this group to talk about this in anything more than very general terms and I had not heard any chat during the observation about this.

Group A Task success (RQ1, RQ5):

Post-task questionnaire:

- When I asked each child to tell me about a piece of information that they had found, each responded with a piece that was correct and appropriate for the task that they seemed to fully understand.
- They were “in the middle” about how well they worked with the others in the group saying that they had done it separately (as I also had observed).

Focus group:

- GroupAGirl1 rated her fact file 3/10 as she did not write very much and she had not written the fact file in pen (NB this idea may have come from another child earlier in the focus group session. She had in fact made the best fact file in the group and one of the best in the class).
- GroupABoy2 rated his fact file 0/10 because he had not added a lot of information to his fact file and did not like his work.
- GroupABoy1 rated himself in the middle because he had not had time to make the whole fact file a design with lots of writing on it (artefact analysis revealed his to be the weakest in the group).

- They thought they could have done the task better had the laptops been working properly and if they'd used books more.

Group A Task enjoyment (RQ1, RQ5):

Post-task questionnaire:

- They had found it “quite interesting” but they had found the task about designing a planet (the only one they had done so far) more interesting.

Focus group:

- This was not their favourite task but had liked it, often for very different reasons to each other. They said preferred the music task (note that they had earlier mentioned the planet task as their favourite).
- GroupAGirl1 said it was boring at first but “once you actually designed it, it was quite fun”.
- GroupABoy1 thought it was good because it was about science and geography.
- GroupABoy2 had not enjoyed the task because some information he saw online “was telling me lies” and “in the book it was information that I did not care”.

Group A Situational and contextual factors (RQ4)

During-task observation:

- This group completed the task in the session where the teacher first introduced the tasks to the class.
- They were the first group to do the task.
- Due to the longer intro they had less time than other groups.
- There were some problems with the laptops.

The teacher's comments about the work of the children in this group was as follows. In the positive “star” comment she praised every child in the group for

their good research skills. Her more critical “wish” comments stressed the need for them to find more information, and also the need for them to work faster on the task. These remarks were borne out by the artefact analysis, which revealed that two children had two or three key elements missing and had left a lot of blank space.

Group A Summary

This group had completed fact files that were very different in style from each other. They worked separately but thought this had been a mistake. They thought using own words and neat writing as important. They had used Google for online searches but had used different sources from each other. They regarded books as a check for online information and were concerned about false info, but had little to say about how they selected information. The boy who used books had performed most poorly (perhaps because he was using it as a check rather than to find new info). Factsheet info had been used, was thought easy but not enough for the task. All had got something different from the task but it wasn't their favourite. The girls who had done best was most self-critical.

Group B

All four children in this group took part in the study. This group completed the task in an unscheduled session when I was not present. No direct observation was made and questionnaires could not be used.

Group B Completion rate (RQ1, RQ5)

All four of the fact files for this group were available for analysis and the findings are presented in Table 5.19 below.

Group B fact file	GroupBGirl1	GroupBBoy1	GroupBGirl2	GroupBGirl3
Chosen Astronaut	John Glenn	Buzz Aldrin	James Lovell	Neil Armstrong

Name	yes	yes	yes	yes
Date of birth	yes	yes	yes	yes
Date of death(age)	no	no	no	no
Place of birth	yes	yes	no	yes
Achievements	First American Man in Space	Second to step on the moon	no	First man on Moon
Other information	4 good facts	0 good facts	3 good facts	0 good facts
Decide what the title should be and how you want to set it out	Astronaut's name Subtitles: "Quick facts" "Short Information" "Education" Colour used Structuring using lines	Astronaut's name Colour used	Astronaut's name Colour used	Astronaut's name Subtitle: "Facts" Colour used
Draw a picture of the astronaut and colour it in if you have time	No pictures	No pictures	No pictures	No pictures
Remember to write the small date	no	no	no	no
Use your best writing	yes	yes	yes	yes
No of elements completed (of 10)	7	6	5	6

Table 5.19: Group B Fact File Content Analysis findings

None of the children in this group had completed all elements of the task. Even using the information provided by the fact sheets, none had completed the quick fact elements with GroupABoy2 and GroupBGirl3 failing to provide any other

information beyond the quick facts. With the exception of GroupBGirl1 who had left very little blank space, these fact files were very empty, with GroupABoy2 leaving more than a 1/3 empty and GroupBGirl2 and GroupBGirl3 leaving around 2/3 of the space free. None had illustrated their fact files but there were some attempts at design, with all using colour, and some attempts at using subtitles and division lines to add structure. The fact files from this group were very similar in style, all of the made in portrait layout and in a linear manner.

Group B Choice of Astronaut (RQ1, RQ5)

Focus group:

- GroupBGirl1 had chosen John Glenn because she “did not know him already”, and so that she could “find out more information”.
- GroupBGirl2 chose James Lovell because she had not heard of him and “wanted someone new”.
- GroupBGirl3 chose Neil Armstrong because she had heard of him and so thought it would be easy.
- GroupBBoy1 gave no reason as to why he had chosen Buzz Aldrin.

Group B Perception of task requirements (RQ1, RQ5)

Focus group:

- GroupBGirl3 said they were supposed to discuss in a group, but they had done the task individually. The rest of the group agreed (there was no observation of this task so it could not be confirmed).
- GroupBBoy1 complimented the work of GroupBGirl1 because she had a lot of information and had used paragraphs.
- GroupBGirl1 praised GroupBBoy1 for having used colours and a picture on the cover of his fact file but criticised his lack of writing.

Group B How information was searched for (RQ1, RQ3, RQ5):

Focus group:

- They had problems searching because pages kept closing.
- GroupBGirl3 said found it hard to find information in the time (artefact analysis showed that he had failed to complete four elements).
- Girls said they had got much of their information from the laptop.

Group B How information was selected (RQ1, RQ3, RQ5)

Focus group:

- They could not always say why they had picked particular bits of information.
- They could not always say whether they thought information was good or not.
- They thought that the information segments about the astronauts' missions were good as were those about place and date of birth.

Group B Sources used (RQ1, RQ3, RQ5):

Focus group:

- All of the children in this group said they had used some of the information from the factsheets provided by the teacher.
- GroupBBoy1 said that he had only used the facts from the sheet because his laptop wasn't working very well.
- Even though they had used factsheet info they did not regard this source as very useful because "it only gave you a few bits".

Group B Task success: (RQ1, RQ3, RQ5)

Focus group:

- All of them thought they had only partly met the success criteria.
- They thought if they had had more time they would have got more information and therefore met the criteria better.

- The girls rated their fact files 6/10 (GroupBGirl2) “because I did not finish mine” and 7/10 (GroupBGirl1) “because I did not really present much. I mostly just had lots of writing and it’s quite plain”.
- GroupBBoy1 5/10 “because I never done that much information”
- (Note that the girl who had done best according to artefact analysis was also the most self-critical).

Group B Task enjoyment (RQ1, RQ5)

Focus group:

- None of this group said this was their favourite task.
- The practical tasks such as designing a planet were favoured.
- GroupBGirl2 said she had enjoyed the task because “we had to go on the computers and find what they do and all that”.
- GroupBGirl1 liked it, “Because you had to go on the computers and find the things that you did not know”.
- GroupBGirl1 said while it was fun in the beginning, as the task went on and got more difficult this made it less enjoyable.

Group B Situational and contextual factors (RQ4)

- This group was second of six to complete this task.
- System crashes affected some of the web searching.

In her “star” positive remarks, the teacher gave similar assessment comments to all four children in this group praising them for having made fact files that were both bright and colourful. In her “wish” remarks she encouraged the children to try to include some more of the information they had found by themselves. Artefact analysis confirmed that only GroupBGirl1 and GroupBGirl2 in this group had done either of these.

Group B Summary

This group completed fact files that contained a lot of empty space and no illustrations. They were in a very similar style to each other. They said they had worked individually but had group discussions at the outset of the task. They had found the factsheets too limited. Girls had particularly enjoyed using computers even though there had been some laptop issues. The girl who had done the best fact file and had added the most information said it got harder as it went on and was more critical than the others. The teacher valued the design elements they had done but noted that they hadn't gone beyond the basics, which the children also (independently) recognised.

Group C

Two of the three children in this group took part in the study: GroupCBoy1 and GroupCGirl1. The other girl decided not to take part. No traffic light evaluation or teacher comments were available for this group but they did answer the pre and post task questionnaire and were observed during the task.

Group C Completion rate (RQ1, RQ5)

Both of the fact files produced by this group were available for content analysis and the findings of this are shown in Table 5.20 below.

Group C fact file	GroupCGirl1	GroupCBoy1
Chosen Astronaut	James Lovell	Buzz Aldrin
Name	yes	yes
Date of birth	yes	yes
Date of death(age)	yes	no
Place of birth	yes	no
Achievements	No (incomplete)	Second person to step on the moon
Other information	5 good facts 1 muddled fact+ 1 incomplete fact	5 good facts, + 1 incomplete fact
Decide what the title should be and how you want to set it out	Astronaut's name Subtitles: "Quick Facts" "Education"	Astronaut's name

	“Personal Data”	“FACTS”
Draw a picture of the astronaut and colour it in if you have time	No astronaut Rocket on front cover 2 moons use of colour	No astronaut Rocket on front cover Use of colour
Remember to write the small date	no	no
Use your best writing	yes	no
No. of completed elements (of 10)	7	5

Table 5.20: Content Analysis of Group C Fact Files

Neither of these children completed all of the elements. Each fact file contained similar amounts of information and differed only in the use or not of subheadings, which GroupCGirl1 had used and GroupCBoy1 had not. Despite adding a lot of information, GroupCGirl1 had not managed to identify the astronaut’s main achievement. These fact files were very similar in appearance with both children choosing a landscape format and writing the facts in a series of columns, with a cover page featuring an elaborate title (the astronaut’s name) as well as a hand-drawn image of a rocket blasting off. Both of the fact files were around 1/3 blank.

Group C Choice of Astronaut (RQ1, RQ5)

Focus group:

- GroupCGirl1 had chosen James Lovell as she ‘knew less about him’ and thought she could get to know more.
- GroupCBoy1 said he was not sure why he had picked Buzz Aldrin but later said “I picked Buzz Aldrin because I have never heard of him”. (NB he also said that GroupCGirl1 had influenced his choice).

Group C Perception of task requirements (RQ1, RQ5)

Pre-task questionnaire:

- Before the task they thought it would be “quite hard” as “it could be tricky to go on the Internet and find things”.
- Before the task they thought they already had a small amount of information already that would help them with the task.

Post-task questionnaire:

- The task was “quite important” as it was “about understanding other people's jobs”. Other topic tasks were about “having fun”.

Focus group:

- GroupCBoy1 said they had to include “what was their missions and what were they famous for”.
- Regarding the purpose of the task, GroupCBoy1 thought “maybe we would take it home and then our mum and dad would see it”.
- Both stressed the importance of putting information in their own words. Only GroupCGirl1 was observed to actually do this.

Group C How information was searched for (RQ1, RQ3, RQ5)

During-task observation:

- GroupCGirl1 types search terms into the address bar. This did not work so she used Google. The terms ‘James Lovell’ found NASA’s website. She also found the Britannica website and spent a long time getting it to load, moving back and forth between it and NASA.
- GroupCBoy1 tried to go straight to Google but took a while to find it because of the poor Internet connection. He performed a search for ‘facts about Buzz Aldrin’. In doing so, he noticed a link about James Lovell and told GroupCGirl1 to go to the same page, which she then did. He helped her to find the right place in the pages.
- GroupCGirl1 found a NASA page about James Lovell with a bio. “It’s a good website cos it has many informations” but was observed to spend a lot of time reading pages unrelated to Lovell or space.

Focus group:

- GroupCGirl1 found it “quite hard” because you had to find the “right” website.
- GroupCBoy1 said that difficulty came from having to go to many websites.

Group C How information was selected (RQ1, RQ3, RQ5)

During-task observation:

- GroupCBoy1 and GroupCGirl1 spent a long time discussing the pages they had found with each other and pointing out bits of the pages without actually writing anything down.

Focus group:

- GroupCBoy1 said he had chosen some information from a book about the date when Buzz Aldrin had joined NASA and said he had chosen it because he had not known it before. (BUT no book use was observed during the task).
- The boy said a difficult aspect of the task had been choosing information from websites.

Group C Sources used (RQ1, RQ3, RQ5)

During-task observation:

- This group was observed to rely on information from the fact sheets and Internet.
- GroupCGirl1 was observed to use the same subheadings to arrange the info that she had found on a webpage about her astronaut.

Post-task questionnaire:

- Immediately post-task neither of them could be specific about where their information had come from other than “websites”.

Focus group:

- In the focus group GroupCBoy1 said that the information he had used had come from books and from the Internet (but the book aspect was not observed to happen).
- GroupCBoy1 drew a picture on his fact file from memory. He chose a rocket “because maybe he went sometimes in a spaceship”.
- GroupCBoy1 said that GroupCGirl1 had helped him when he was stuck. “She gave me ideas”.

Group C Task success (RQ1, RQ5)

Post-task questionnaire:

- They were “quite happy” with the group’s work and individually.
- Both children found the task “quite interesting” and were “in the middle” about how easy it had been to find information.
- When I asked them to tell me a bit of information they had found, their replies were task-appropriate and well understood.

Focus group:

- GroupCBoy1 scored his fact file 8/10 as it did not have enough information. He had not met the success criteria “cos we did not do very good group work” and “because we were all arguing” and “because there wasn’t much time” but later contradicted this saying he had worked “very well” with others. The girl’s score is not known.

Group C Task enjoyment (RQ1, RQ5):

Focus group:

- GroupCBoy1 thought “it was fun cos I did my part trying to find the page”. “Researching” had been his favourite thing.
- GroupCBoy1 had preferred the music task to this one. This, the Solar System topic, had been his favourite topic this year.

Group C Situational and contextual factors (RQ4, RQ5)

- This group were last to complete the task.

Focus group:

- They thought they needed more time to get more info.
- The girl found the task “quite hard” due to slow Internet. The boy said “it was difficult cos if you were on one page they could like ...it wouldn’t work and it took a long time to load so we had to go on a different page and it could be difficult to find another page”.

The teacher had not, at the time of collecting the assessment sheets, provided any comment on the work of this group.

Group C Summary

This group’s fact files were very similar in appearance and structure. They had a sense that the fact file was meant for use by other people and also that it was an important task compared to others-not just about having fun. They had difficulty getting started. They found a lot of suitable websites but had difficulty in choosing information despite working together for part of it. The multi-source aspect was thought difficult. One said he had used books but this was not observed. He had also contradicted himself on whether he had worked with others. The boy in the group had helped one of the girls with some information. She had ended up with more elements complete than he had.

Group D

All four children in this group took part in the study.

Group D Completion rate (RQ1, RQ5)

All four fact files from this group were available for analysis and the findings of this are reported in Table 5.21 below.

Group D fact file	GroupDGirl1	GroupDGirl2	GroupDBoy1	GroupDGirl3
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Chosen astronaut	Buzz Aldrin	Sally Ride	Neil Armstrong	James Lovell
Name	yes	yes	yes	yes
Date of birth	yes	yes	yes	yes
Date of death (age)	yes	yes	no	yes
Place of birth	no	yes	no	no
Achievements	Buzz was the second to step on the moon	The first American woman in space	First to step on the moon	Spent 30 days in space
Other information	3 good facts	5 good facts+1 repeated fact	5 good facts+2 repeated facts	4 good facts
Decide what the title should be and how you want to set it out	"Information"	Astronaut's name	Astronaut's name Subtitles": "Quick Facts" "Information"	Astronaut's name
Draw a picture of the astronaut and colour it in if you have time	No astronaut Moon Rocket Designed title Use of colour	No astronaut Rocket Designed Title	No pictures Use of lines to structure Use of colour	No pictures Use of colour Non-linear structure
Remember to write the small date	no	no	no	no
Use your best writing	yes	no	no	yes
No. of completed elements (of 10)	7	7	5	7

Table 5.21: Findings of Content Analysis of Group D Fact Files

None of the children in this group had completed all of the elements. With one exception (GroupDGirl2) they had all failed to include the Place of birth of their

astronaut. All of them attempted a design of some sort but in rather different ways, some of which included images (GroupDGirl1, GroupDGirl2) and some none (GroupDGirl3, GroupDBoy1). Three fact files (GroupDGirl1, GroupDGirl2, GroupDBoy1) were similar in design, designed in landscape format with a series of columns and no facts on the front cover. GroupDGirl3 had chosen portrait format and included several facts on the cover. Each fact file had around 1/3 of the space blank except for that of GroupDGirl3, with around 1/2 blank, however she had a similar amount of information to the other children in this group.

Group D Choice of Astronaut (RQ1, RQ5)

Focus group:

- GroupDBoy1 picked Neil Armstrong “because he is my favourite astronaut”. He knew a bit about him before the Solar System topic.
- GroupDGirl3 wanted Neil Armstrong but when he was no longer available, picked James Lovell.
- GroupDGirl1 wanted Neil Armstrong. When he was no longer available she picked Buzz Aldrin whom she had not heard of.
- GroupDGirl2 “picked Sally Ride because I had never heard of her before and I thought that would be good”.

Group D Perception of task requirements (RQ1, RQ5)

Pre-task questionnaire:

- Using own words was thought important. They were going to “do a design cover”, “see what missions he done”, “take some information from the card” “find out how many times he has been to space”. They thought it was going to be “quite hard” because there would not be enough time. They thought they had “not very much” information already that would help them.

Focus group:

- GroupDBoy1 “you had to like design our fact file and put some text on it as well so you could present it in a good way... it was

kind of easy cos you had like a [fact] sheet and it told us like date of birth and missions. And we weren't allowed to copy it, it had to be in our own words".

- GroupDGirl3 and GroupDBoy1 thought the purpose was to create a fact file for others in the class, perhaps to read out to them. GroupDGirl2 thought, "Maybe the teachers can use it to see how much we've done".
- GroupDGirl3 thought that creating the fact file would allow the teacher to "see our good writing" which she and GroupDGirl2 agreed was an important aspect of the task (though only one of them had done writing that was judged to be good in the artefact analysis).
- GroupDBoy1 thought pictures were "quite important to ...you need a diagram. Say for example you were talking about a planet, you need a diagram to show the planet" (BUT he had not actually included any pictures).
- GroupDGirl3 "I think pictures are important because to amuse the readers because if it's just boring then you'll just go to sleep. (BUT she had not included any pictures either)
- They wanted to add more info but couldn't find it e.g. GroupDBoy1 "his personal details.... like who is his mother or father, has he got brothers", GroupDGirl1 "like what age is he now". GroupDGirl3 "how many missions he failed...did not manage to find it out".

Group D How information was searched for (RQ1, RQ3, RQ5)

Observation during task:

- GroupDGirl3 and GroupDGirl2 could not work out how to search on the laptop at first.

- The teacher intervened on a couple of occasions: once to point the group to the books available and once to assist girls in finding Google.
- I observed that GroupDGirl3 was reluctant at first to do any searching using Google, as she was unsure about spelling.
- GroupDGirl3 made the keyword searches ‘what age was James Lovell when he did his first mission’, ‘facts about James Lovell’ and ‘interesting facts about James Lovell’.
- GroupDGirl2 was observed using the search ‘what age was Sally Ride when she was on her second mission’. (Note that artefact analysis revealed that this group had been particularly good at finding astronauts’ date of birth and their current age)
- GroupDGirl1 searched using ‘Lots of facts about Buzz Aldrin’.
- GroupDGirl3 showed GroupDGirl2 a Wikipedia page about Sally Ride.
- GroupDBoy1 was seen to use buzzle.com, experiencing proxy errors.

Focus group:

- GroupDGirl3 “it was difficult cos you could not find what you wanted it was...it kept repeating what it was that was written down (on factsheet)”. GroupDBoy1 “we did not know which website to go to”. GroupDGirl1 “because you had to go on like different pages to find the information”.

Group D How information was selected (RQ1, RQ3, RQ5)

Observation during task:

- GroupDGirl2 and GroupDGirl3 were observed to find information but be reluctant to choose it. They constantly asked each other for direction on this. “I need help. I don’t know what to write down”.
- GroupDGirl3 was confused by James Lovell appearing as “Jim” on his Wikipedia page, as “James” was his name on the factsheet.

Focus group:

- They had mixed opinions about the factsheets provided by the teacher: GroupDGirl3 “not that good because I found the exact same page on the computer”. GroupDBoy1 I think it was quite good because most of the information [on my fact file] was from the sheet. GroupDGirl1 a little bit. It had a little bit but not enough informations (sic)”.
- They chose information GroupDGirl1 “cos it’s interesting” and GroupDGirl2 “cos I did not know that”.
- GroupDGirl2 got some info from another girl: “Sally Reid (sic) was 31 when she was on her first mission. I think it was from the one that GroupDGirl3 told me, the one that was the same as the sheet”.
- GroupDGirl2 “if we did not know if it’s true or not we could have looked on a different website and see if that was the same words”.

Group D Sources used (RQ1, RQ3, RQ5)

Post-task questionnaire:

- They all seemed to understand the pieces of information they were asked to read out to the researcher from their fact files but struggled to say where the information had been found.
- They rated the information sources used as mostly “very good” even if they could not say what these were.

Focus group:

- GroupDGirl2 and GroupDGirl3 said they had got some information from the computer and some from books.
- GroupDBoy1 said “It was some from the sheet the information sheet and the others we got from the websites or the Internet”.
- GroupDGirl1 had got some information from her existing knowledge, for example a picture of the moon that appeared on her fact file “I just drew it because we were looking for something about the moon...(it was from) my memory”.

Group D Task success (RQ1, RQ5)

Post-task questionnaire:

- Everyone in the group was “quite happy” with the work the group had produced and with the work that they had done individually.

Focus group:

- They felt that they had only met some of the success criteria because e.g. GroupDGirl2 “I thought we could have worked better as a group cos I would help GroupDGirl3 more to look for information and help GroupDGirl1”, and not having got enough information (GroupDBoy1, GroupDGirl1). GroupDGirl1 put this down to not having had enough time.
- They rated their fact files: GroupDGirl3 “4/10 cos I did not enjoy it that much and I did not get a lot of information”, GroupDGirl2 “6/10 cos it’s not got neat handwriting and it’s not got enough information... it’s got a lot of space”, GroupDGirl1 9/10 “cos I could have wrote a wee bit more here”, GroupDBoy1 “9/10 cos I did not design it enough” (Note that GroupDBoy1 rated his fact file highly despite having two fewer elements complete than any of the girls, and GroupDGilr2 being harsh on herself despite a fact file with a similar amount of info to the other girls).

Group D Task enjoyment (RQ1, RQ5)

Post-task questionnaire:

- Despite the fun aspects, GroupDBoy1, GroupDGirl3 and GroupDGirl1 said that the task had been difficult.
- GroupDBoy1 said “it was fun writing and designing” (NB he contradicted this in the focus group by saying that he had not in fact enjoyed the design).

Focus group:

- All children in this group said that they had enjoyed the task and the overall topic but preferred the rocket and music tasks.
- The girls had enjoyed the researching and information aspects but had not enjoyed doing the design,
- GroupDGirl1 had not enjoyed doing the writing.

Group D Situational and contextual factors (RQ4)

This group was fifth of six to complete the task.

Group D Summary

This group's fact files were quite different from each other. They thought the fact file was for informing others. Even though they said they valued elements such as good handwriting and images, they had not necessarily used or included them. They had found searching difficulty due to issues with spelling and tended to use long search strings and several interventions from the teacher were required. They acknowledged that they had often worked together. They had difficulties with choosing information and were frustrated by finding the same information in multiple places. One was confused by James vs. Jim. They had much better ideas than other groups about additional info that they could have included. The boy in the group contradicted himself about whether or not he had enjoyed the task. They were mostly happy with how they had done and were critical of a lack of neatness. Girls had not liked the design aspect of the task.

Group E

All four children from this group participated in the study though GroupEGirl1 missed the focus group and did not provide a fact file for analysis but her contributions in other parts of the evaluation are included here nonetheless. She chose to work on James Lovell.

Group E Completion rate (RQ1, RQ5)

Three of the four fact files from this group were available for content analysis: GroupEBoy1, GroupEBoy2, GroupEGirl2. GroupEGirl1's fact file was unavailable. The findings are reported in Table 5.22 below.

Group E fact file	GroupEBoy1	GroupEBoy2	GroupEGirl2
Chosen Astronaut	Neil Armstrong	Buzz Aldrin	Sally Ride
Name	yes	yes	yes
Date of birth	yes	yes	yes
Date of death (age)	no	no	yes
Place of birth	no	no	no
Achievements	First to step on the moon	Second to step on the moon	She was the first American woman in space
Other information	3 good facts+2 repeated facts	5 good facts	4 good facts+3 repeated
Decide what the title should be and how you want to set it out	Astronaut's name Designed title	Astronaut's name "Facts"	Astronaut's name Designed Title
Draw a picture of the astronaut and colour it in if you have time	No picture Use of colour	No astronaut Earth Use of colour	No picture
Remember to write the small date	no	no	no
Use your best writing	yes	no/yes	yes
No. of elements completed (of 10)	6	5.5	7

Table 5.22: Findings of Content Analysis of Group E Fact Files

None of the children in this group had completed all elements with all failing to provide the place of birth. All included a similar number of pieces of information beyond the astronaut's main achievement but in the case of GroupEBoy1, GroupEGirl2 it seemed they had not always read the information properly or checked over their fact files, as there was a lot of repetition. In GroupEGirl2's fact file, a date of birth had been repeated 3 times. Both GroupEBoy1 and GroupEBoy2 had made their fact files in landscape layout and in 3 columns, where GroupEGirl2 made hers in portrait with a linear style. GroupEGirl2 and GroupEBoy1 made a lot of effort in designing titles. GroupEBoy2's title was plain but he had, unlike the others, drawn and coloured a picture of the earth on his front cover.

Group E Choice of Astronaut (RQ1, RQ5):

Focus group:

- GroupEGirl2 picked Sally Ride "cos it was a girl".
- GroupEBoy1 picked Buzz Aldrin "because he was the first man to step on the moon". He knew this before the task.
- GroupEBoy2 "picked Buzz Aldrin because I read about him in the facts [sheet] and he was actually quite a nice man". It is unclear whether he had known about Aldrin before the day of the task.
- NB It became clear in the focus group that no-one in this group realised that Buzz and Edwin Aldrin were the same person. This had led to some comprehension issues.

Group E Perception of task requirements (RQ1, RQ5):

Pre-task questionnaire:

- This group thought it "important to get the right facts"
- This task was important as the other tasks in the carousel were "just making stuff" whereas this was "finding information".
- They thought it would be "moderately hard" to "hard" and had a lot of info already from a space topic done in a previous year.

Focus group:

- GroupEGirl2 described the task: “there was a sheet where you copied the name from and we had to just get information from it... then you go on to the computer and you get more information from the computers”.
- GroupEBoy1: “we had to pick our own astronaut and write about his date of birth and mission and records and write facts about him, when his mission was and when he goed to the moon on his mission and like, who was with him when he went on the mission”.
- One striking thing was their interest in which astronauts had worked together e.g. GroupEBoy2 “was Buzz Aldrin and Sally Rider (sic) in one team group to discover about the sun?” and GroupEGirl2 “who went in that spaceship with Sally Ride?”

Group E How information was searched for (RQ1, R3, R5):

Observation during task:

- All of the children in this group ended up using the same website buzzle.com after GroupEBoy2 found it and told the others to use it.
- They were observed to also use Wikipedia (GroupEGirl2), and Wikianswers.com (GroupEBoy2).
- GroupEBoy2 was observed trying to share information that he had found with others in the group by telling them facts verbally.
- This group were observed not to use books at all during the task.
- GroupEGirl2 was observed to go straight to Google and search using the terms ‘Sally Ride’. On finding Sally Ride’s Wikipedia page, she scrolled the page then returned to Google and did another search, finding the brighthub.com site. Despite the quantity of information there she did not use it, doing further

Google searches including 'Sally Ride why did she go to space?' and 'Sally Ride facts for kids'.

Focus group:

- GroupEBoy1 summed up how a lot of children had done the task: "One of the ways was, miss did for us a fact file on Neil Armstrong so we just ...first we got the quick facts about him... got the informations in there.... and then the second thing [was] we went on to the computer and started researching like about the fact file and there's facts about him".
- One of the key aspects of this group was that one child found a website that the others then all used GroupEGirl2: "yeah when someone [GroupEBoy2] like found a good website that had all of the astronauts and on and the he told everybody". GroupEBoy2: "I said to [the group] I like told the group to go on the website. I said right Buzz Aldrin I wrote it myself and there was Sally Rider (sic), John Glenn, Neil Armstrong and all that so and they had a big name including Buzz Aldrin so I clicked that and I said 'GroupEGirl2! GroupEGirl2! Come on this one! GroupEBoy1! GroupEBoy1! Come on this one!' and I told the group can you go on that one and there is options and we all got to do all of it and I finished mine".

Group E How information was selected (RQ1, RQ3, RQ5)

Observation during task:

- They spent a lot of time checking with others in the group that what they had done for their fact file was good, looking for reassurance. And for help in choosing information. One asked the others: "Are most rockets red?", "Is John Glenn famous?" one answered: "If you're on the Internet you are famous".
- GroupEBoy1 found a fact that did not seem right on wikianswers.com and so was not keen to write it down.

- GroupEBoy2 who found buzzle.com using 'Buzz Aldrin facts' told the girls to use it because "This is good information" "You can go on Wikipedia too but this [buzzle.com] is more for children".
- Several children were observed to copy info verbatim in paragraphs.

Focus group

- Some selection was poor e.g. GroupEBoy2 wrote about his astronaut being in "NSA" (NASA) and realised during the focus group that this might not be a good bit of information "because I do not really know what NSA stands for".
- None of them chose info from books. GroupEBoy1: "I was trying to look but it's all space rockets and no astronauts in the books. GroupEGirl2 and I looked in them but there was nothing".

Group E Sources used (RQ1, RQ3, RQ5)

Observation during task:

- Several of them were wholly reliant on one page of the buzzle.com

Focus group:

- They reported getting info from Wikianswers.com, which they found "Ok", but were otherwise vague about where info was from.
- Information "from the computer" and from the factsheets was thought "quite good" and they had used some of each (this was borne out by the artefact analysis).

Group E Task success (RQ1, RQ5)

Post-task questionnaire:

- On task difficulty they ranged from "quite easy" to "quite hard" and the latter answer was linked to lack of time.
- All thought they had done the task "very well" and said this was partly down to GroupEBoy2 sharing information.

- None of them had found the topic particularly interesting.
- They were “in the middle” about easy it had been to find information. Some websites had been “a wee bit hard” (borne out by observation).
- GroupEGirl2 said she had to get help from GroupEGirl1 to do the task (borne out by observation).

Focus Group:

- GroupEGirl2 rated her fact file 5/10 as she ran out of time and “did not do a lot” but thought what she had done was good (artefact analysis revealed that she had done the best fact file in the group and was among the better ones in the class).
GroupEBoy1: 7/10 “because we never quite had time to finish it and write more facts”. GroupEBoy2: 9/10 “I got everything done....and I was proud of myself”. (In fact artefact analysis revealed that this was the weakest fact file in the group and also in the wider class).
- GroupEBoy2 felt he was successful, as he had shared information with GroupEBoy1 and GroupEGirl2. GroupEGirl2 said “I think we did meet (criteria) cos we worked as a group”. GroupEBoy1 agreed and said that GroupEBoy2 found a site that helped them all to complete the task well (borne out by observation).
- GroupEBoy2 said “when we wrote ours down we got [understood] what we were doing cos we read the success criteria [on the task sheet] and so we done it as a group, as a team... and we worked out what like sections are we gonna like do it in... so we like talked it through what the paragraphs mean so we check and then we say yeah is that true we would say do we check in books”.

Group E Task enjoyment (RQ1, RQ5):

- All enjoyed it. GroupEBoy1 and GroupEGirl2 said doing the cover design as one of the reasons. GroupEBoy2 said, “because this is my first time doing this”. GroupEGirl2 said she enjoyed it because loved writing. (Note however that GroupEGirl2’s fact file contained a lot of writing but many repeats of the same information).
- GroupEGirl2 and GroupEBoy1 thought this task came somewhere in the middle of the other tasks in the Solar System topic in terms of enjoyment. GroupEBoy1 preferred making the model spacecraft.

Group E Situational and contextual factors (RQ4)

This group were fourth of six to do the task, completing it in week 4 following the completion of three other tasks on this topic.

The **teacher comments** regarding this group’s work were as follows. For the positive “star” comment she complimented the quality of the information that they had included on their fact files and praised them for having shared information during the task. For her more critical “wish” comment she encouraged them to work faster and to keep to the time allotted for the task.

Group E Summary

There were lots of repetitions in this group’s fact files. There was confusion over Buzz vs. Edwin Aldrin. They regarded this as an important task compared to the others. It seemed sometimes that they were slightly led by other in their answers in the focus group. They had coped with Google searches and had a sense of the differences between the quick facts and the other information required. They were reluctant to choose information and did a lot of checking with others before doing so though it wasn’t clear that their questions had always been terribly useful. Some sharing had gone on once the boy in the group found the “right” website. They were sceptical about web information but it did not stop them from copying info that they did not understand. No books

were used. They were more strategic than the groups in their searching but this had not led to better overall success. The novelty of the information and the chance to do writing were reasons why it had been enjoyed. Both teacher and children noted the time factor that had stopped them from doing better.

Group F

All four children from this group took part in the study.

Group F Completion rate (RQ1, RQ5)

Fact files from three members of this group were available for content analysis: GroupFGirl1, GroupFGirl2, GroupFBoy2. The fact file of GroupFBoy1 was unavailable, however he had completed one and it was used during the focus group session. The findings are shown in Table 5.23 below.

Group F fact file	GroupFGirl1	GroupFBoy2	GroupFGirl2
Chosen Astronaut	Neil Armstrong	John Glenn	James Lovell
Name	yes	yes	yes
Date of birth	yes	yes	yes
Date of death (age)	yes	no	no
Place of birth	no	no	no
Achievements	First man on the moon	no	Spent 30 days in space
Other information	7 good facts	2 good facts	3 good facts. Some slight confusion
Decide what the title should be and how you want to set it out	Astronaut's name	Astronaut's first name	Astronaut's name
Draw a picture of the astronaut and colour it in if you have time	Astronaut Moon Solar system Designed Title Use of colour	No pictures	No pictures
Remember to write the small date	no	no	no
Use your best writing	yes	yes	yes

No. of elements completed (of 10)	8	5	6
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Table 5.23: Findings of Contents Analysis of Fact Files of Group F

None of the children in this group had completed all of the elements, however GroupFGirl1 had come closest. GroupFGirl2 and GroupFBoy2 had both produced fairly weak fact files that had several of the basic facts missing and, in the case of GroupFBoy2, the astronaut's main achievement. The fact files of GroupFGirl2 and GroupFBoy2 were in fact quite similar, both of these children having designed a front cover with the name of their astronaut (unfinished in the case of GroupFBoy2) along with the date of birth of the astronaut and with the inclusion of a couple of pieces of information on the reverse of the document. Neither had included any pictures. GroupFGirl1 by contrast had no text on her cover design beyond the astronauts' name and two images, and had saved all of her facts for a bulleted list on the next page. All of the children in this group had made their fact file in landscape format and had organised their information in a series of columns even if they had not yet filled them. Interestingly, GroupFGirl1's fact file was the most spectacular of all those completed by this class while those of GroupFBoy2 and GroupFGirl2 were two of the weaker examples in the class.

Group F Choice of Astronaut (RQ1, RQ5)

Focus group:

- GroupFGirl2 chose James Lovell "because he was ...I wanted to know something about moons and he was in the ...first people the... first man who went on the moon.
- GroupFBoy2 was not really sure why he chose John Glenn but said "cos he ...probably because I just saw his face".
- GroupFBoy1, GroupFGirl1 and GroupFGirl2 said they knew about their astronauts before the task. GroupFGirl1 said "I chose Neil Armstrong because he was the first person to step on the moon

and that was very interesting for me...I usually do watch programmes about space and all that stuff because I like it”.

Group F Perception of task requirements (RQ1, RQ5)

Pre-task questionnaire:

- They thought this task was important and that they’d be looking for “information that is not just fun you can learn from it”.
- They thought they should make their fact file “attractive” and said they’d be working both as a group and as individuals.
- GroupFBoy2 described the search approach he was going to take as “just write in the computer the first John who went to space”.
- They thought it would be hard as they would run out of time.
- They thought they had only a small amount of information already.

Focus group:

- GroupFGirl1 summed up how the task had been outlined to the groups: “Well there were these cards that had like astronauts and everyone had to like decide on which one they were going to pick and then when you picked your person you look in the books and then on the laptop and find some interesting facts like about what day they were born in and what year and like if it was about Neil Armstrong it would be about he was the first person to step on the moon and then when you find all the information then you write it on a piece of white plain paper and then you start making your fact file and then you write all the stuff in like groups and then you can decorate it if you finish quickly then you’ve got your a fact file”.
- GroupFGirl2 “...interesting facts about them...You had to write like their personal details and stuff like that what they did in space. Who was the first man on the moon stuff like that”.

- GroupFGirl1 explained why presentation mattered: “how to make it interesting and make it grab a person’s eye and just attractive and all that stuff so you have to have it like it needed to be in big bold writing and things like black or red cos they are very dark colours. Like for instance yellow or white they won’t really show much because it will just be like dull and you have to have it interesting so like that a person can keep reading on”. (Note that this girl’s fact file was arguably the strongest in the class both in terms of information and presentation).

Group F How information was searched for (RQ1, RQ3, RQ5)

Observation during task:

- They worked mostly alone throughout, with occasional interactions.
- Typical searches: ‘Facts about Neil Armstrong’, ‘John Glenn age’.
- They tended to give up very quickly on their keyword searches.
- They were observed to look at the following websites: girl using Brighthub, girl using Britannica, boy using Wikipedia.

Focus group:

- It emerged strongly that they thought a task requirement was to only use information that they had found in multiple sources. And all of the children in this group said that they had used both books and Internet for the task e.g. GroupFGirl1 “in the books if you already know stuff like if you researched it before you can write that and so you can look in the books yourself or in the laptops. I found out his name of birth. It was 5/8/1930 from the laptop and I researched it twice to make sure it wasn’t a made up one”.
- It wasn’t easy to find what they wanted but using multiple sources had helped: GroupFGirl1 “... about when he retired or when he passed on because he is still alive and he is 79 and I was like oh...I wanted to know if he was still alive cos I was

researching it and it doesn't really give you an answer on the laptop so I was researching in the books and found that he was still alive".

Group F How information was selected (RQ1, RQ3, RQ5)

Observation during task:

- Some confusion arose when a boy looking at Wikipedia interpreted footnote symbols as actual numbers and was not sure how to use this.
- A boy was seen to copy information to a piece of notepaper before copying it more neatly on to the fact file. He did not understand what NASA is or how to say it but copied it incorrectly (NSA) regardless.

Focus group:

- It emerged very strongly in this group that one of the most important requirements for a piece of information was that it could be confirmed by finding it in more than one source e.g. GroupFBoy2: it was a bit hard finding it... when we were on the laptop finding information, we have to find... like first we have to go to the website that says something else then another website says something else that we have to find a website, two websites that says his age like the same". When asked where they had got the idea that this was important GroupFBoy2 said "because Miss said that anybody could make a website and write anything". The others in the group agreed that they had followed this strategy for the same reason. Even if they had not always had time to write down the information, some had learned facts about their astronauts e.g. GroupFBoy1 "I know he was an engineer. I got it from the laptop (but haven't written it down yet)".

Group F Sources used (RQ1, RQ3, RQ5)

- GroupFGirl2 “James Lovell... he has spent 30 days in space. That came from the books. It’s a good bit of information”.

Group F Task success (RQ1, RQ5)

Post-task questionnaire:

- They thought they had worked “well” with others in the group and found the topic interesting.
- The task was thought to be “hard” because while they found sites “quickly”, they found it difficult to read through the information.
- They remembered using Wikipedia (but were unsure which pages they used) and brighthub.com, an educational website.
- They were “unhappy” with the work their group produced and “unhappy” with the work they had produced individually.
- They had enjoyed finding info and transferring it to the fact file.
- All in the group said they had not liked that time had run out.

Focus group:

- All felt that they had met the success criteria for the task (Note that this contradicts what they said in the post-task questionnaire).
- GroupFGirl1 explained their success as being down to having listened to what the teacher had asked them to do.
- GroupFGirl1 attributed their success to the researcher having helped them (note that she had been careful only to help when asked to with technical issues relating to the computer equipment): GroupFGirl1 “if it was not for youse [you] two we would probably be like stuck on stuff so you like you helped us with the laptops and gave us like instructions”. The others in the group agreed that they had used help from the teacher and me.

- All said they found it easy, but there had been technical issues: GroupFGirl1 “sometimes the laptop got frozen and you could not write any more”.
- Rating their fact files: Boy 9 “9/10 I didn’t do that much. I just wrote (sic)” (Note that he had completed one of the weakest fact files in the class), GroupFGirl1 “I think I would probably give mine a 10/10. I’m not sure but I put a lot of effort into it. It’s because I have used most of the information on my page about his personal details and like other ones are like interesting facts and then I’ve got other ones are interesting facts about the solar system. Like on the front cover I have got his name and the character and I think it’s quite good” (Note that this was arguably the best fact file in the class, certainly it was much better than the others in the group), GroupFGirl2 “8/10 cos I didn’t add that much details and I wanted to add some interesting facts but I didn’t because of our laptop (not working very well)”. GroupFBoy1 wanted to give his 0/10, but when it was pointed out that he had done a design he moved this to 4/10 but would not elaborate on why.
- They thought they could have done better had they worked more as a group. GroupFGirl2 and GroupFBoy2 in particular thought that they had not worked well together. Lack of time was cited and was also the reason so many had left blank spaces: GroupFGirl1 “I would have probably thought that if we had more time it would have been much more better cos we put a lot of effort in and we ran out time a lot and there was only two bits of information”.

Group F Task enjoyment (RQ1, RQ5):

- All enjoyed the task. GroupFGirl1: “you’re not only learning about how to write a fact file... plus you are learning how to go into the laptop and research and then write it in your groups”.

- Their favourite tasks were the music and rocket making. The group work in these tasks was a reason for this as well being “a bit of fun” (GroupFGirl2) and a chance to be artistic (GroupFGirl1).

Group F Situational and contextual factors (RQ5)

- This group was third of six to complete the task.
- One laptop took a long time to log in delaying the activity for one child who later said “I hate computers because they never work”.

The teacher made the same assessment remarks to all of the children in Group F. Her positive “star” comment commended on having found “good information.” Her more critical “wish” was an encouragement to keep to time instructions”.

Group F Summary

The weaker fact files in this group were very similar to one another, while the best was very unlike the others. This group thought this was an important task and not just for fun. They thought that presentation mattered and a lot of duplication of effort was noticed in this regard e.g. rewriting information more neatly. They had done the task individually despite similarities in style between a few of the fact files. Searching had been hard and they thought searching for the same information in multiple places to verify it was very important. This meant they used books and Internet. They found information online quickly but reading it was difficult. Information had been copied even if it had not been understood. The girl who had produced the best fact file was the most reflective on all aspects of the task. A boy in the group had overrated his work where a girl had underrated hers. This group had required a lot of support from both me (technical help only) and the teacher (help with search) and they attributed their success in part to this. The teacher had been impressed with the information they found.

Astro7 Overview of Task Performance

Child ID	Adherence to task instructions (out of 10)	Self-Rating (out of 10)	Reason for self-rating	Traffic light score	Traffic light comments
GroupABoy1	5	10	Because I am good	Green/Amber	I think I should have worked harder and faster and internet should have worked
GroupABoy2	6	0	Not a lot of information	Amber	I didn't get enough information but it was still fun
GroupAGirl1	8	3	I did not write very much	Green	Great. I need to add more information
GroupBGirl2	7	7	Because I did not really present much. I mostly just had lots of writing and its quite plain.	Amber	I think I did OK but I could have wrote more of what it asked for me to do
GroupBBoy1	6	5	Because I never done that much information	Green	I think that it was a lot of fun
GroupBGirl1	5	6	Because I did not finish mine	Red	I think I should work faster on this
GroupBGirl2	6	not available	not available	Red	I think should work faster and understand a bit more.
GroupCGirl3	7	not available	not available	not available	I think I worked hard at it
GroupCBoy1	5	8	It did not have enough information	not available	not available
GroupDGirl1	7	9	Cos I could have wrote a wee bit more here	Amber	It was OK. I almost had none information about Buzz but worked with my group a bit for help.
GroupDGirl2	7	6	Cos its not got neat handwriting and its not got enough information. Its got a lot of space.	Amber	I think I should have worked more with my group
GroupDBoy1	5	9	Cos I did not design it enough	Amber	I managed to create a fact file in time with my group
GroupDGirl3	7	4	Cos I did not enjoy it that much and I did not get a lot of information	Amber	I think we could have wrote more.
GroupEBoy1	6	7	Because we never quite have time to finish it and write more facts	Green	We work well as a group to help each other with facts.
GroupEBoy2	5.5	9	I got everything done. I was proud of myself.	Green	It was interesting and fun.
GroupEGirl1	7	5	I ran out of time. I did not do a lot.	Amber	I quite enjoyed doing this (it) was fun but we had less time to do it and meet some of the success criteria

GroupEGirl2	not available	not available	not available	Amber	I thought I needed some more time but it was really fun.
GroupFGirl1	8	10	I put a lot of effort into it	Amber	I think this task was hard but I done well
GroupFBoy1	not available	4	not available	Amber	I wasn't finished yet but I did found interesting facts
GroupFBoy2	5	9	I didn't do that much I just writed	Amber	I think I didn't do well
GroupFGirl2	6	8	Cos I didn't add that much details but our laptop (wasn't working)	Amber	This task was very hard

Table 5.24: Astro7 Self-Evaluation of Fact File Completion and Task Performance

The table above (Table 5.24) shows in the second column how many elements of the task file (out of a possible 10) each child had successfully completed. The third column shows how they had rated their own fact files during the focus group. Further analysis showed that when these scores were averaged over the sample, the average score for the fact files was 6.2/10 where the average score for the self-rating was 6.6/10 so, in general, children rated their completion of the fact files slightly higher than was revealed in the artefact analysis. The same analysis was performed on the ratings of boys and girls in the interests of **RQ5**. It was found that boys on average rated their fact files as 6.8/10 where girls were slightly more negative with 6.4/10, however it should be borne in mind that the artefact analysis (performed in the line with the task sheet instructions) identified that girls' fact files had on average 6.8/10 completed elements while those of boys had 5.3/10 completed elements on average. Clearly, number of completed elements is not the only indicator of success either in the completion of the fact files, nor in the task, but these differences in self-evaluation are striking nonetheless. In short, boys tended to overrate their fact files, while girls tended to underrate theirs.

With regard to the traffic light evaluation detailed in the table, statistical analysis revealed no correlation between the number of elements completed and the traffic light rating given, nor between the self-rating given to the fact file and the traffic light rating. This analysis was repeated on the girls' data and the boys' and again no correlation was found. What did emerge (and this is noted

earlier in this chapter also) was that in the traffic light evaluation, boys had tended to rate their performance of the task higher than girls had via the traffic light evaluation. It is also notable that the only children who had rated their performance of the task as Red were two girls whose fact files were among the weakest in the class, certainly the weakest among the girls, where some of the weakest boys had rated their own performance as Green. Looking at the written comments that accompanied the traffic light evaluation (far right column of the table), of the comments made by 8 boys, 4 were wholly positive, 3 had positive and negative elements and 1 was wholly negative. Girls' comments were more critical: of the comments made by 12 girls, only 1 was wholly positive, 6 had positive and negative elements and 5 were wholly negative, indicating again that girls tended to be more self-critical than boys using this type of evaluation. When the comments accompanying the self-rating of the fact file were analysed, it was found that the most common reasons for both boys and girls to give themselves imperfect scores i.e. less than 10/10 were not adding enough info, followed by not doing any or enough design. Girls had tended to be more reflective in their comments, often giving a reason why they had done well alongside the reasons why their fact file wasn't perfect.

A further analysis was performed to establish whether there had been any effects due to the order in which the groups did the task i.e. where in the 3-week period they had their time slot to do it. The order was shown to have had no observable effect on either the extent to which they had completed the task nor on their self-rating of their completion of the fact files.

Summary of Findings Astro7 Task

Astro7 Completion rate (RQ1, RQ5)

- None of the children had met all of the criteria. Place of birth was rarely done, neither was date of death/age. While all had managed to write something beyond the "Quick Facts" the teacher provided, many failed to identify the astronaut's main achievements.

- The requirement for a drawing of an astronaut was adhered to by only one child but around half had drawn something related to space.
- The level of completion did not vary much between groups but there were variations within groups in number of elements completed, (up to 3 points of difference) even in those groups where several had used similar layout to each other (around half the groups). Weaker pupils tended to use similar layout to other weak pupils in the group.
- There was no pattern as to what was present or missing on the fact files in each group and in that sense they were acting as individuals.
- Most fact files had significant areas of blank space or indeed were mostly blank. Children were aware of this and often mentioned it when evaluating their work, often with a sense of needing to add more information (not that the teacher did not mention empty space but often the need to add more info).
- Girls' performance was better than that of boys in terms of elements completed and guideline adherence.
- Completion rate was independent of the astronaut chosen. Knowing about the astronaut beforehand did not appear to have an influence on the completion rate either.
- Contrary to the task instructions, none had used the small date format for any of the dates they had written down and the teacher did not mention this in any of her feedback comments about the task.
- The most common reason given for not completing all elements was lack of time (the teacher's comments indicated that she thought they had had enough time but that they often hadn't worked fast enough).

Astro7 Perception of task requirements (RQ1, RQ5)

- Around half of the groups said they had worked individually. Observation confirmed this. These groups tended to express regret following the task that they had not worked together more closely but it is not clear whether they had thought it was a requirement of

the task or whether they thought it would have led to better task success (Given that the teacher tended to give children in the same group similar feedback, regardless of performance it seems she viewed the task as a group activity, at least in part and her verbal instructions at the start indicated this too).

- Children often said that more information was needed on their fact files to improve them but could rarely express what that might be with the exception of one group who gave very good examples.
- There was no sense that they thought one astronaut was better or easier to work on than the others. They were unconcerned about researching someone they didn't already know. Some saw the novelty as positive, in fact. None complained about the choice of astronaut they had made either during or following the task (there were 5 astronauts per group and a maximum of 4 children, so they always had a degree of choice).
- Some thought they were making a fact file to show the teacher how well they had worked. Others said it was to have a quick way for people to learn about the topic e.g. others in class or parents. As a result, it had to be entertaining and not have facts that were too long. One group said in the focus group they thought they were making the fact file to please me, which I found surprising, as I had no sense of this in any other interaction with this group or any other.
- The design aspect did not emerge as something they thought very important but the need for neatness of presentation was emphasised by a few, both in the traffic light feedback and in the focus groups. Neat handwriting and writing that was clear and bold were valued. Note that the task instructions had mentioned "Best writing". Most, but not all had produced fact files that indicated they had paid real attention to this (the teacher made very few remarks about presentation in her post-task feedback but did include encouragement for better handwriting).

- Group A, who completed the task first, performed in line with the average but rated their fact files far lower than any other group had done. It could be that having heard the teacher give the instructions immediately before doing the task produced this effect i.e. their perceptions of what was required were heightened and so were harsher on their performance, but it seems unlikely. Their comments immediately post-task were positive; it was only in the focus group that the more self-critical attitude emerged.
- Sharing information with others was seen as virtuous (and indeed was praised by the teacher). There were a couple of groups where the search success of one child led to the others discovering a good source of information about their own astronaut and there was a sense of pride about this, perhaps indicating that they thought it was an important requirement of the task, but certainly reflecting a sense of success.
- In general, at the outset, they thought the task was going to be quite difficult but they thought they had some existing information that might help them (note that this was elaborated on by one group who mentioned doing the topic previously and examples in all groups of familiarity with at least one of the astronauts and key concepts such as rockets and planets).
- Children emphasised the need to put information in their own words. They were trying to do this even when it didn't make much sense to do so e.g. with the "quick facts" such as a date of birth, so arguably they were over-emphasising it in some cases. (The teachers' comments indicated that this was an important element of the task but did not differentiate between the quick facts and the "other information" aspects of the task in this regard). She was critical of those who failed to achieve it).

Astro7 Sources used (RQ1, RQ3, RQ5)

- Many had drawn on existing knowledge when choosing their astronaut and when completing drawings for the task.
- All children had used factsheet information but had conflicting opinions about it. Some thought it useful, while others thought it too limited (which indeed it was intended to be-the teacher showed via her instructions and also her written feedback on their work that they were expected to go beyond this information).
- Some felt they had been forced sometimes to rely on the factsheet info alone (for various reasons: time, technical issues, difficulty finding/selecting info), and they were disappointed about not having added additional information.
- Most children seemed very keen to get information online but did not always manage to do so, so even those fact files for which a lot of online searching had been done, remained free from information from that source.
- The vast majority of the images on the fact files had come from the children's existing knowledge of the topic but were more generically about space rather than about astronauts per se.
- A variety of websites had been used having been found via searches in Google and the browser bar e.g. Wikipedia, buzzle.com, NASA.com (seen during observation) but none of the children were able to say, post-task, which sites they had used. None were seen to go directly to any of the sites used.
- Some children, boys in particular, said they used books for the tasks and were enthusiastic about using them. (NB This was even in the case in those groups where the researcher had not observed them to use books at all. Nonetheless, book use had been in evidence in a few groups).

Astro7 How information was searched for (RQ1, RQ3, RQ5)

- Searching for information had been difficult. The limited time available was cited by half of the groups as a reason why, as were difficulties with using the laptops, which was compounded by the timing issue.
- Children in a few groups were seen to struggle to get started with searches, and had to be directed to Google, by the teacher.
- Searches tended to be of the form “facts about John Smith” i.e. usually short sentences or questions rather than just key words Issues with spelling had held up some searching (both observed and discussed in focus groups).
- There was some vocabulary confusion and misunderstanding about nicknames such as Buzz vs. Edwin Aldrin and Jim vs. James Lovell (this was seen in observation and in focus groups also).
- There were problems getting certain web pages to load properly. A lot of time was spent on such issues, with children seeming determined to persevere with loading a page rather than trying another page or medium.
- Children had a strong sense of their being a “right” website for the information they needed and often found it extremely difficult and frustrating to find it and to deal with not finding it.

Astro7 How information was selected (RQ1, RQ3, RQ5)

- Many children experienced difficulty in, and expressed frustration at having had to visit multiple sites to find the info needed.
- Some were frustrated on finding that information they found online was often a repeat of the information on the fact sheets-they had gone to the effort of reading through it, only to realise they had it already. Sometimes it had been copied before they realised this (if at all).

- There were many difficulties selecting information even from sites that appeared to have everything they needed-some said they needed help from peers to do this (this was borne out by observation).
- Even if a site had been easy to find, they said that reading through it had often been difficult (this was seen during observation).
- In a few groups, boys were helping others (usually girls) to go to sites they had already found that they thought useful, or were finding information that was relevant for others and sharing it with others in the group. In all cases where this was either observed, reported or both, the boys in question had ended up with a fact file that was weaker than the fact files of those they had helped.
- They were generally good at finding pages that would have been of some use for the task but either struggled with reading or failed to do it properly, if at all (observed first hand and confirmed in focus groups) and often had severe problems with selecting information (observed first hand and confirmed in focus group)
- There were frustrations on finding information online that repeated what was on the factsheets (but they did not seem not see this as a possible way of checking validity).
- A few children wrote the same facts multiple times with slightly different wording due to copying without properly reading or copying the same thing from multiple sources.
- Some were keenly aware that a lot of online information was untrue. This was an overarching theme in one group and it made it even more difficult for them to be confident in their selections.
- Books were generally thought more reliable than the Internet though one boy said he had found “lies” in a book used during the task.
- One group said they used books as a check for Internet information i.e. they were looking in multiple media to verify facts (the teacher said nothing about this in the task instructions) and regarded books as more reliable than the web.

- Another group said they were looking for information in multiple sources to verify it, but this did not seem to involve the use of books necessarily, they meant finding multiple websites that said the same thing (Again, the teacher said nothing about this in the instructions).
- Another group had a keen awareness that information online was often untrue but did not offer a strategy for dealing with this.
- Several children had copied information despite it being incorrect or misunderstood e.g. NSA instead of NASA. The child who had copied this said in the focus group that he did not know what NASA was, indicating limited domain knowledge and vocabulary in relation to this topic. Other children in the group did not know either.

Astro7 Task success (RQ1, RQ5)

- The order in which this task was done relative to other tasks on the topic had not had an observable effect on how/how well it was completed, nor on how well children thought they had completed it.
- The fact files for the better-known astronauts were not obviously better done than the others nor was their completion rate better.
- Those groups who did the task slightly later tended to be more specific about which of the other tasks they had preferred to this one. Making the spaceship/rocket and the music task were equally favoured. None of the groups said this was their favourite task.
- One possible effect of working on a well-known astronaut was that those children who created fact files about them tended to rate their fact files higher on average than children who worked on other astronauts but numbers are small so it is difficult to be sure.
- According to the traffic light evaluation, children tended to rate their task performance somewhere in the middle, with Amber being by far the most common rating. There were few Green and Red ratings.

- In their written self-assessment comments the things that were most commonly mentioned by children in relation to their task performance were related to not having not put enough information.
- Boys rated their performance higher than girls rated theirs (cf. Poster Task results where this was also the case) and only two children, both girls, rated it Red.
- In the focus groups, boys tended to rate the quality of their fact files higher than the score they received when their fact files were analysed relative to the task requirements, where girls (who in general had done better than the boys) tended to rate theirs lower.
- Before the task, they largely thought that it would be quite a hard task to do but ultimately found it neither easy nor hard. They had found it quite interesting and were quite happy with how they had done as individuals but were less happy with their performance as a group (Note that those groups who said they had worked individually were often critical about this later).
- This class did not often compare their work to that of others either in the group, or in the wider class, even though they would no doubt have seen others with completed fact files in previous sessions. There was no sense of competition between groups.
- The teacher tended to give similar if not exactly the same feedback (both positive and negative) to most if not all members of the same group, even if the researcher did not view their work as being particularly similar (but it is possible that the teacher may have been observing the group in a different way from the researcher and making notes about timekeeping, for example, that the researcher was less invested in). This also indicates her perspective that this was a group activity rather than a purely individual one.
- The most common criticism that the teacher made of the children's work was the need to work faster. This is not surprising as a majority of the fact files seemed unfinished with large blank spaces, often up

to 1/3 of the available space being used and what space was used being filled mostly with information taken from the factsheets given by the teacher, often with up to half of the required elements missing.

- The teacher's other main comments were about the need to add more information, in particular, more information that they had found themselves. This mirrored the manner in which many of the children had evaluated their own performance both in the traffic light evaluation and in the focus groups.

Astro7 Task enjoyment (RQ1, RQ5)

- The Solar System topic was universally liked by this class.
- Only one child said they had not enjoyed the task at all, but relented slightly during the focus group.
- Boys had enjoyed it more than girls, despite their relatively poor performance in completing the fact files.
- Those who shared information with others or directed them to what seemed to be useful sites had enjoyed doing this aspect of the task and took pride in telling me about it during the focus groups.

Astro7 Situational and contextual factors (RQ4)

- Some, but not all, had encountered a similar topic in a previous year, which they had enjoyed. They suggested that the knowledge gained may have helped in the task, though no specific examples were given.
- Most children already knew Neil Armstrong and what he was famous for. Some knew Buzz Aldrin and a few said they knew some of the other astronauts, though this was sometimes rather unconvincing. The findings show that this previous awareness (or not) had not had a noticeable impact on how the task was done but it did influence which astronauts were chosen first and which most often.
- The best-known astronauts were chosen more often than the others and children who wanted to work on these astronauts often didn't

get their first choice. Boys were more likely to get their first choice and more likely to work on either Neil Armstrong or Buzz Aldrin (but as earlier remarks show, the effects on performance were minimal).

- Most thought they had not had enough time to complete the task. The teacher's comments indicated that she did not agree with this, often insisting that they must find a way to work faster in future.
- Some of the websites visited did not support well the browsers used, causing pages not to load, to crash or not to render correctly. Children often wasted time persevering with such pages rather than trying another search or medium.

Further discussion of the **Astro7** task findings and reflections on the methodology used to investigate it will be made in Chapter 8 Discussion alongside discussion of the other formal tasks in this chapter, the **Clydebank Blitz** Homework Task and the **Leisure Task**.

Section 3: ARP1 and ARP4 Tasks

In this section I will report on findings from the **ARP1** and **ARP4** tasks, which were part of the Air Raid Precautions carousel of tasks carried out by **P7**. This is a somewhat briefer section than the two previous as these tasks were much shorter in nature than either the **Poster Task** or **Astro7**, each taking around 25-30 minutes vs. the 60-90 minutes of the previous tasks. In addition, the data collection for these tasks was carried out using fewer evaluation tools employed with a smaller section of the class than were employed with the **Poster** and **Astro7** tasks which involved, responses from the whole of the **P7** and **P5** classes respectively.

The research question that I particularly wanted to address by investigating these tasks was **RQ3** on preferred information channel, due to **ARP1** having a book focus and **ARP4** having a web focus, but there was likely also to be

relevant data on all of the other questions. Certainly **RQ5** on gender could be analysed for and there would be insights about notions of task success as per **RQ1**, requirements for support in information seeking as per **RQ2** and perhaps also data on the influence of the context or situation in which information seeking takes place. These tasks are fully outlined in Chapter 4: Study Set Up and the methodology used to investigate them are detailed in Chapter 3 Methodology but, for the sake of clarity, I will provide a brief recap of the task outlines and a summary of the methods used to investigate them.

Task outlines (brief recap):

For **Task ARP1** children, in their groups, had to carry out research using books and make notes in their jotters under the following headings: “ARP Wardens and their role in enforcing Air Raid Precautions”, “The Blackout”, “Bomb Shelters”, “Gas Masks”.

For **Task ARP4** children had to use a BBC webpage to find out some facts about air raid shelters and what children would take into them, making some notes about this. They then had to find out further information online for the same headings about air raid precautions as in **Task ARP1**, again making notes. These tasks were done in the usual groups with different groups doing them in different sessions over the course of a few weeks. Half of the children did **ARP1** first then **ARP4** a few sessions later, the other half did **ARP4** first then **ARP1** a few sessions later.

Evaluation methods

These tasks were evaluated using **observations** during the tasks, **pre and post task questionnaires**, **artefact analysis** and **focus groups** (carried out with all 6 groups). Focus groups were conducted using the artefacts children had created, in this case, what they had written in their jotters. Via the two **teacher interviews** conducted, and the assessment comments she had made in each child’s jotter, the teacher’s perspective on the task was also gathered. The findings are reported below.

ARP1 (Book task) Completion rate

Inspection of the children's jotters (artefacts) revealed that almost every child who had done this task (a few had missed it due to illness or other absence) had written a large amount for the headings outlined by the teacher, more so than they had done for almost any of the other tasks in the ARP and Rationing carousels. Most had written something for at least three of the headings, typically 3-6 discrete bullet points, with around a quarter having completed all four headings. Girls had written slightly more for each section than boys and more of them had completed more of the headings. A few children had managed to complete only two of the headings and had, again written 3-6 bullets for each. Almost invariably, children had used headings that were underlined and had written their notes as short bulleted sentences.

ARP1 Perception of task requirements

It was clear that there had been a strong emphasis on neatness both in the work completed and in the feedback in the focus groups where the importance of good presentation and use of good handwriting were often mentioned. Children often mentioned the need to do things neatly to each other while completing the task. In the pre-task questionnaire a few groups said they thought this was a much more important task compared to other tasks such as making gas masks as it was "about life and death" (Group 1) and a few groups used the word "important" when describing the information that they had to find and write down. The task sheet very clearly mentioned the use of books but a few groups said it was fine to use books or own knowledge to complete the task. Some children, mainly boys, thought it would be ok to do the headings in any order and indeed a few boys were observed to do this during the task. This was also clear from inspecting the jotters. The teacher did not mark them down for this. They weren't all sure whether the task was to be done as a group or not, indeed one group was heard to ask the teacher about this during the task. She confirmed that they should indeed work together. Group 1 decided among themselves that they should work in a group as otherwise it would "take

longer". The groups who were observed were seen to look at the task sheet mostly to copy down the exact wording of the four headings but not for any other reason. They did not read it in full before commencing.

ARP1 How information was searched for

The groups that were observed exhibited the following behaviour: typically girls were working individually for the first half of the task with a book each, then would copy the information points from each other that they didn't yet have, then would share with others in the group. Boys also shared information but less quickly and efficiently than girls were seen to do. In the groups that were observed, not all of the books were looked in. Some were never opened. There was a sense in the groups both in observation and focus groups that one book was the "good book" (the exact book varied from group to group) and that if children hadn't managed to have a "shot" of that one, this was the reason why they hadn't done quite so well. Group 3 asked the teacher if they could use books from elsewhere in the classroom, which they then did. The same group had also used info from a book that one of them had got from the library. None of the other groups had done this but it did not seem to have impacted on either Group 3's success in the task from their own perspective or from the teacher's.

ARP1 How information was selected

A few groups said they had sometimes written down things from the books that they knew they didn't understand because they thought it was "good information". There was a sense that the books only had "main info" and that to get more detail they would have had to look somewhere else. Several groups said that using the books was hard. One child said that finding stuff was hard "even if you knew how to use content pages and subheadings". One said that the info found "wasn't specific enough". Much of the info on their jotters had been copied from others in the group, having first been copied from the books. Children did not show any particular discernment when copying from others- they copied everything they didn't already have and the others were happy for them to do this. The teacher did not criticise this when assessing their work.

ARP1 Sources used

The main sources used were the books provided for the task, plus information copied from the jotters of other children who were currently completing the task i.e. others in the group. Some said they knew some of the information already from the teacher and that made it easy and therefore they had also been using or in some cases relying on their own knowledge. As already said, Group 3 had also consulted additional books and a library book, though it was not clear if info from these was used.

ARP1 Task success

The groups that said they thought they had done well e.g. Groups 1 and 5 also said they had worked well as a group and had shared a lot of info, indeed Group 1 had been observed to do this on many occasions. Both of these groups thought they had met the success criteria and rated the group's performance highly. The groups that said they had not done well, tended to say they hadn't got enough information and, in the case of Groups 3 or 4, hadn't liked the task, as they hadn't been asked to include pictures in their answers. All children had received individual positive written assessment feedback from the teacher, with a majority of comments praising the structure of their notes rather than the content. In the interviews the teacher said she thought they had got a lot from the books during the topic, naming this particular task. Those groups who had found it "easy" (5 and 6) were also the groups that had found it "boring".

ARP1 Task enjoyment

Three of the groups (3,4,5) had found it to be a largely un-enjoyable task even though they reported differing levels of success e.g. Group 5 thought they had done very well, where the other groups did not. It had been "boring" and looking through books was "a drag" for each of these three groups. Having to write so much wasn't fun at all and they felt a game or using the Internet would have been much better fun for finding out the information. Only Group 1 said

they had found it truly enjoyable, liked using books and thought it had been a chance to “impress the teacher” with what they had found out.

ARP1 Situational and contextual factors

Note that Group 1 who had enjoyed the task most of all the groups and also rated their performance highly, had previously focused on ARP Wardens for the Poster Task. It is possible their experience of that task may have had an influence on this one.

When it came to **ARP4**, the web-based task, the findings were as follows:

ARP4 Completion rate

All of the groups observed were seen to at least look at the website for the first part of the task, but the task was poorly completed with only half of the children having written an item in all of the 6 boxes required. Those children who had completed the first part in full had done so in around five minutes, which meant there was plenty of time left to follow the rest of the instructions to complete the 4 ARP headlines. Many children had however spent many minutes more exploring the website, even parts that were unrelated to ARP and even pages that were teacher guidelines rather than tasks or topic information. For the second half of the task, the ARP headings, only seven children in the class had written something for all of the headings. Irrespective of the number of headings completed, those who had completed it had done so with 2 or 3 bullets per heading and the headings had been completed in the order on the task sheet.

ARP4 Perception of task requirements

Before the task, groups had the sense that this was an important task for a few reasons: two of them said because they would learn something new that they didn't know already, one because it would help them learn to find information and another because it would help them “see what children in the war did not have”. One group thought the task was “about evacuation” rather than ARP. The

groups who were observed were seen to barely look at the task sheet before commencing the task and only rarely while doing the task. Some children never looked at the task sheet at all and appeared to rely on what others in the group were doing as their guide to what to do. There was only one task sheet per group, which may have added to this issue. All of the observed groups were seen to take a very long time writing and underlining headings for their work and doing very neat writing, which gives a further sense of their priorities for the task. In her written assessment comments, the teacher praised neatness in a few, but not all cases.

ARP4 How information was searched for

All had gone straight to try and load the website described in the task sheet. A few had struggled to type the address correctly and took several minutes to find the page. Once it had loaded, not all had carried out the exercise they were supposed to do first. One group, for example, spent some time playing a game unrelated to the topic of ARP. After doing the first part of the task, the groups either used Google with the keywords of the ARP headings (observed) or went straight to the Woodlands school website.

ARP4 How information was selected

Children from a couple of groups said that picking research results from a list for this task had been hard and indeed in the observations, they were often observed to spend many minutes scrolling without reading, and clicking around before writing anything at all. On a few occasions, children were observed to find what looked like a useful page for the task, then to leave it quickly, then struggle to re-find it again after they had decided it might be useful after all. This led to a lot of visible and audible frustration. Boys were observed to be very keen to copy dates from the webpages they found. Girls managed to copy more information than boys did from the pages they found. Arguments about whether information could be copied as it was or put in own words were observed in a few groups. One of the groups who said they had done it well (6) also said that they had shared a lot of information with each other and this was

also seen in observation, with girls sharing with girls and boys with boys in the group.

ARP4 Sources used

Several groups had used information from the Woodlands website for the second half of the task, writing the headings. Some had found it via a keyword search where others seemed to remember having found it, used it or both during a previous task, possibly the **Poster Task** and were keen to go directly to it again. Group 6 said they thought the information they had found on the Internet had more detail than books would have had and that the Internet had made the task easy. Group 3, who had done the well and rated their on performance highly noted that lots of the websites they visited had “the wrong information” but that they had found a lot on one page.

ARP4 Task success

Group 3 rated their success highly and put this down to their having found a lot of information for the ARP headings. Group 6 also rated their own success highly compared to the others and said that this was because they done it well, in their own words and that their notes had been good. This group were observed to be very concerned about neatness during the task and had produced work accordingly. The teacher in her written and interview remarks thought that in general they could have written much more for this task. Only one of the groups (1) thought they had not written much and this was why they rated their performance low. The others thought they had done enough.

ARP4 Task enjoyment

Only Group 3 said they had really enjoyed this task. The reasons given were getting to play a game and because it was on a computer. Only Group 1 said they hadn't all enjoyed using the computers and they had rated their enjoyment of the task lower than all the other groups also. All of Group 4 had thought aspects of the task were fun but boys in the group were disappointed that it had not been about the conflict of the war. Group 6 had been annoyed by difficulties

with pages loading. In general groups said they had found this task easy and often this had negative implications. In one group (6) it meant they couldn't see the point in doing it, in another, they were worried that if they did it too quickly they would be given something else to do.

ARP4 Situational and contextual factors

All of the groups who were observed during the task were seen to experience problems with websites crashing or failing to load and some children reported the same in the focus groups. The availability of other books around the class and library books in children's bags and desks meant there were additional resources children could and did draw on if they showed the initiative to do so.

ARP1 and ARP4 Summary

In summary, children generally said they had found the **ARP1** book task harder than the **ARP4** web task. They also thought they had not done as much as they could have for **ARP1** where few said the same about **ARP4**. However, inspection of their written work and observations revealed better collaboration within the groups, more written work being produced in general, and more that was relevant to the headings that were to be completed for **ARP1** than was the case for **ARP4**. In addition, the teacher thought they had done the **ARP1** task rather better than **ARP4**, using good structure for their writing and showing that they had found a lot of good relevant information. They hadn't found either task particularly interesting but thought they had learned something from both. It appeared that **ARP4** was thought to be easier because it involved the Internet and there was more information there, nonetheless, few of the children who completed **ARP4** had written very much for the section about taking items to a shelter nor for the ARP headings section despite initial direction to a dedicated site of information in the first instance. There were differences between girls and boys for **RQ5** and differences for **RQ3** on information channel in particular. The teacher's perception of their success in the task as per **RQ1** was that **ARP1** had been done rather better i.e. they had read more, written more and been more focused. They had also tended to work together more to complete this

task that was the case for **ARP4**. Children however, even if they rated their performance in the book task higher than in the web task, had tended to enjoy the web task more and say they had found it easier even if they had been observed to struggle to find and select much information.

Section 4: Rationing⁶ Task

In this section I will report on findings from the **Rationing⁶** task, another formal, imposed classroom-based task that was part of the second Carousel of activities on **P7's** World War Two: The Home Front topic. Again this will be a somewhat briefer section than the first two sections of this chapter due to the task being much shorter in nature than either the **Poster Task** or **Astro7** and the data collection having been done using fewer research tools. These tools were employed with a sample of the class i.e. with a far smaller number than were the research tools employed with the **Poster** and **Astro7** tasks. The task is fully outlined in Chapter 4: Study Set Up and the Methodology used to investigate it is detailed in Chapter 3 Methodology and the methods used, similar to those used to evaluate **ARP1** and **ARP4** in the previous section.

At the outset groups could not agree on whether this was an important task, with Group 6 thinking it might make more sense to learn more about boats during the war, for example than the subject at hand, similar sentiments were expressed by other groups at the focus groups stage. Group 2 and Group 3 stressed the importance of working in pairs and sharing ideas and this was observed to happen in around half of the groups. Many of the children however were observed to be working either alone or effectively alone as another child watched what they did at the computer. The most popular answer for things they had liked about doing the task were **playing the game** (3 groups) where in fact most of them had been observed to abandon the games very quickly. Some children were observed to be playing a game unrelated to the task rather than the information games associated with rationing. Children had also valued **learning new information** (3 groups) **working with others** (2 groups). Group 6 said they hadn't enjoyed anything but did admit that **working with a partner**

might have been ok. In terms of what they least liked about the task, 3 groups complained about the **game not working or being slow** and indeed this was fair comment as both the website and the game itself had been observed to take a long time to load: laptops often seemed unable to handle the content of the site. They all rated the information they had found as *very good* whereas an inspection of their jotters often revealed a rather different picture. By looking at their work as it was written down in their topic jotters, contrary to what many of them said the information they had found was incorrect and of low quality with regard to the task because they had not read or responded to the context of the questions correctly. Often they had clearly just been reading and copying from the site without fully digesting what was there. All groups were *happy* to *very happy* with the work their group had produced, and were slightly less happy with the work they had done as individuals. Group 3 said they were *very unhappy* with the work they had done individually, but in fact on inspection Group 3's work was rather better than that of other groups. They all thought they had worked *quite well* as groups and had found the task quite interesting. Finding information had been thought *quite easy* by all of the groups. The easy elements of the task had been that things "*were right there*" and that "*miss told us where to go*". This was of course the case, but it is worth mentioning that despite having had this direction, often just typing the web address correctly was a challenge for some children. The hard elements were "*writing facts*". Indeed, even more so than I observed in other tasks children asked for a lot of guidance as to which parts of this child-oriented but rather busy in appearance website they should be focusing on, which parts they should take information from and which specific bits to take.

When asked about information they had found out, all groups talked about the food that existed and did not exist at the time, with most groups also mentioning clothes. All were accurate in their descriptions, showing an understanding of some of what they had found out. Four groups said they had got their information from playing the game, while two said they had got it from reading other web pages. When asked what they could have done to make the

task better, two said “play more better games” and two said they could have “done better or more writing”. When jotters were inspected it was clear that some children had written down very little information or no information at all, but those who had tended to write a lot, and to do so verbatim, with few exceptions. In focus groups it was clear they often had not understood this information, nor why they had chosen it. Group 6 who liked the task least said that future tasks should be about battles because “battles are more interesting. This is about life”.

Section 5: KWL Grid P7

In what follows I discuss the handwritten self-evaluations that the **P7** children completed prior to starting the World War Two topic and again after completing it. The intention is to gain a greater understanding of children’s domain knowledge and perceptions of the WW2 topic at various stages of undertaking it and to gain some insights into their motivations, interest and satisfaction in studying the topic. The insights gained will be used to inform the discussion of the three **P7** tasks investigated for this thesis.

As used throughout Curriculum for Excellence and therefore an activity with which they would have been familiar, the class were asked to complete a KWL grid. **KWL** stands for *What I Know Already*, *What I Would Like to Know*, and *What I Have Learned*. An example KWL grid may be seen at Appendix 11. The first part, the *What I Know Already* is intended for completion close to the beginning of a topic to establish what children know or think they know about the topic at hand. In this instance, this section was completed in lesson 3, following the introductory sessions and before the Poster Task or any of the carousel tasks had been completed. The second section, *What I Would Like to Know* is a chance for children to indicate what they would like to know about the topic before it has fully got underway. This section was also completed in lesson 3. The third section, *What I Have Learned* is intended for completion once all of the topic work has been completed. This section was completed in the final session of the topic i.e. after the completion of the topic.

I was able to collect responses for 20/30 children (11 boys, 9 girls) drawn from all 6 groups, with at least 2 members of each included.

KWL Grid Findings: What I know already

Table 5.25 below shows what the children said they knew or thought they knew about the topic. Their answers were very reflective of the material they had encountered in the first two sessions of the topic. Girls and boys gave similar answers for the most part, though 3 girls mentioned women working while none of the boys did while three boys mentioned Hitler being German leader while none of the girls did.

What I know already	No. of boys	No. of girls	Total
Children were evacuated	7	8	15
Men had to go to war	7	5	12
There were food shortages	4	4	8
Hitler took over half the world	4	4	8
Children did jobs	5	3	8
Lots of people died	2	2	4
Hitler started the war	3	3	6
Hitler was the leader of Germany	3	0	3
Women had to work	0	3	3

Table 5.25: P7 KWL Grid Top Answers to "What I Know Already"

Around half of these top answers were concerned with the Home Front aspects of the war with the others being concerned with wider aspects of the war including the conflict and casualties. There were many more categories where only one or two children had given that answer with boys writing slightly more answers each (average=4.4) than girls did (average=4), with individual boys knowing facts such as the start and end dates of the war, the involvement of the UK and USA and Churchill being PM.

KWL Grid Findings: What I would like to know

The top answers for *What I would like to know* are shown in Table 5.26 below.

What I would like to know	No. of boys	No. of girls	Total
Why did the war start?	6	3	9
Will there be a world war 3?	4	2	6
How did the war start?	3	3	6
Who won the war?	4	0	4
Which countries were in the war?	2	2	4
What weapons did they use in the war?	2	2	4
How did the war end?	1	2	3
How many people died in the war?	3	0	3
How many survived the war?	2	1	3
Why did Hitler kill so many people?	2	1	3

Table 5.26: P7 KWL Grid Top Answers to "What I Would Like to Know"

What is most noticeable about the top answers from both boys and girls is that they are not at all focused on the Home Front, in fact it is barely mentioned, even though this is where the focus of their later tasks and learning would be. The boys gave a total of 46 (average=4.2) answers across 26 categories and the girls gave 34 (average=3.8) answers across a similar number, but not the same categories.

KWL Grid Findings: What I have learned

The third section of the KWL grid, the *What I have learned* section was intended for completion in the final week of the topic. Only around half (10/20) of the children for whom I had collected the grid had completed this section with more girls than boys (6 vs. 4) having done so, so there is less to report here. Four children (2f, 2m) mentioned Germany having started the war, with the same girls also mentioning that they had learned why the war had been started by Germany. Topics mentioned by the boys included **how many people died**, the **start and end dates of the war** and the **possibility of WW3**. Girls also

mentioned the possibility of WW3, two mentioned **wartime jobs**, two mentioned **evacuation**, one mentioned **gas masks** and another girl mentioned **food** and **housing** as things they had learned about. It seems the girls who provided this feedback had shifted significantly since the earlier evaluations and they were more focused on the Home Front aspects of the topic that they had been learning about over the previous weeks. The focus of boys remained on the conflict aspects of the war, much as had been the case in their completion of the two earlier sections of their completion of the grid.

The results of this analysis and what it means about children's motivations and priorities and how their conception of the topic evolved as it proceeded will be included in the discussion in Chapter 8 Discussion.

Chapter Summary

In this chapter I outlined the findings of five classroom-based teacher-imposed formal tasks: four with **P7** and **P7** as well as one pre and post-topic evaluation exercise conducted with **P7**. The findings indicate differences in notions of success in information seeking between the task setting adults and the children who perform the tasks. The findings also indicate different notions about the utility of and preferences for different information sources and channels at different ages. Further, the findings indicate differences in the support required by children of different ages when performing similar information-seeking tasks. Among the findings are strong indicators of differences between boys and girls in respect of all of these factors and evidence of how the context or situation in which the information seeking takes place affects how and how well a task is performed. A further finding resulting from analysis of the KWL grid completed by **P7** revealed evidence of the information context in which **P7** carried out their research for the task carousels and explored issues of domain knowledge, interest, motivation and satisfaction. These findings, along with those from Chapter 6 Homework Task and Chapter 7 Leisure Task will be discussed further in Chapter 8 Discussion.

Chapter 6 Findings II: Homework Task

In this chapter I discuss the findings of a homework task that the **P7** children were assigned towards the middle of the World War Two: The Home Front topic on the local theme of “The Clydebank Blitz”. The background to this task and the details of how it was outlined to the children are described in detail in Chapter 4 Study Setup, and the methods used to evaluate it were introduced in Chapter 3 Methodology. In a repeat of the methodology involving focus groups and artefacts employed with other tasks evaluated in this thesis, artefacts that children produced in doing the task were analysed, then several focus groups were conducted using the artefacts as support, involving a sample of eight children. Focus groups were conducted within a few weeks of the completion of this task. Written comments and interview comments made by the teacher in relation to her perspective on the task are also reported within the findings. The chapter is organised according to the factors that were outlined in Chapter 3 in relation to each research question: **completion rate, perception of task requirements, sources used, how information was searched for, how information was selected, task enjoyment, task success** and **situational/contextual factors**. The findings for these are also related back to the relevant research questions. The chapter concludes with a summary of the findings from this task.

Task Criteria and Guidelines

The children were given six elements/questions to complete/answer as part of their assignment.

- *Where is Clydebank (map?)*
- *What was the ‘blitz’?*

- *What was Clydebank like before the blitz?*
- *What was Clydebank like after the blitz?*
- *When did the blitz happen?*
- *Why did the Germans choose Clydebank?*

The guidelines (written by the teacher on the classroom whiteboard) were written exactly as follows:

You are going to write a REPORT about the Clydebank Blitz. You should include:

- *Good information in your own words*
- *Pictures/maps/drawings/diagrams*
- *Headings and subheadings*

Remember

- *Your writing must make sense*
- *Good presentation*
- *Punctuation*
- *At least 3 pages long*
- *Bring back on 23/04*

Children had 3 weeks in which to complete the task outside of school hours.

Method

A fuller account of the methods used to investigate this task is provided in Chapter 3 Methodology.

A sample of the completed reports was taken, taking care to involve equal numbers of girls and boys and a good spread of representatives from the topic groups, with a view to conducting focus groups with these children, using the reports they had produced as a prop for the discussion. Their reports were also analysed to see what they had/had not completed and how well they had done so. The teacher was asked about the task in an interview and the comments that she had written on their reports were also analysed. The children who took part were: Group5Boy2, Group1Boy3, Group6Boy1, Group5Boy1, Group2Girl1, Group2Girl3, Group1Girl1, Group4Girl2, all of whom had submitted a report for marking. Only children who had made an attempt were included in the focus groups on advice from the teacher. (NB I was not party to what the gender split in the wider class was in terms of those who had submitted a completed report and who had not, therefore some caution is necessary when considering this sample as being typical of the whole class, certainly it could be considered typical of those who had completed the report). Additionally, I was able to obtain the report written by a child who was mentioned in the transcripts in relation to two of the children working together. I thought it worthwhile to examine his work to see what these reports might have in common, recorded here as Group6Boy2.

All of the children seemed relaxed during the focus groups and all contributed answers without any child dominating. They took their turn to speak without talking over others, and allowed others to have their say. The relatively small size (4) of each focus group appeared to facilitate this equality of participation. A few questions went unanswered initially, however the conversation generally flowed well. (NB: By this point in the study, all of the children in the class had been involved in at least one other focus group). Girls said more on average than boys and tended to provide spoken reflections that were more frequent and longer in duration than those of the boys. (NB This is very noticeable from the lengths of the quotations included later in this chapter, with quotations from boys tending to be much shorter than those of girls). Nevertheless, boys seemed just as able to express themselves on the topic at hand, appearing to understand

the questions and conversation topics, and being keen to contribute their points of view and describe their experiences during the sessions just as much as girls were.

Completion Rate

The findings in this section contribute to answering **RQ1** on how children perceive success in information seeking vs. adult perceptions of success. All eight of those interviewed had made an attempt at completing the assignment and a majority had written something for all of the questions (despite, as we will see later, the perceptions of some children that answering all of them was not required). Children said they had completed the task in between 2.5 and 7.5 hours, typically 2.5-3 hours. In line with the guidelines, most children in the sample had clearly given some thought to the **presentation** of their report, and had used **good punctuation**. All but two of the reports were fully 3 pages long as per the requirements of the task with 3-4 pages being typical. The longest was 6 pages (Group4Girl2), the shortest were Group6Boy1 and Group5Boy1 with 2.5 pages each. Girls' reports tended to be slightly longer on average than those of boys (4 pages vs. 3). All eight reports contained **headings and subheadings** and these were invariably worded in the same way as the questions that had been asked. Where things had gone less well was in terms of "**good information in your own words**" with both of these requirements being missed multiple times by multiple children. All of the children in this sample had followed the guideline for including **images**, including at least one image in their report. The girls' reports contained slightly more images (a total of 14 images vs. a total of 11 images) than did the boys' reports. All but one of the reports was handwritten, one having being typed on a computer and printed before being stapled into the report jotter (Group5Boy2). In general, the questions were answered in no particular order and images appeared in some reports throughout the narrative, while in others they were left until the end of the report.

Table 6.1 below provides a quick overview of the elements that had/had not been completed and the teachers' comments about them.

Child ID	Length (pages)	Elements attempted (of 6)	What's missing	Teacher Comments
Group5Boy2	3	5	Before the Blitz	-Great effort-some good information -Great photos -Make sure you put the information into your own words
Group1Boy3	4	4	Before the Blitz After the Blitz	-You have worked hard -Good photos before/after the war -Be careful-lots of your info is about London
Group6Boy1	2.5	5	When did it happen	-You have tried hard
Group5Boy1	2.5	4	Where did it happen Before the Blitz	-Lots of good information -Organised
Group2Girl1	3.5	5	Before the Blitz	-You have found useful photos -Some good info included -Be careful to research about Clydebank not London
Group2Girl3	3.5	3	Where did it happen Before the Blitz Why did it happen there	-You have worked hard -Most of your info is about London not Clydebank
Group1Girl1	3	4	Where did it happen When did it happen	-Well-organised -Some is written in your own words-is all of it? -You must write down where you got your information
Group4Girl2	6	6	n/a	-Lots of excellent information-you have worked hard. -Organisation and use of photos brilliant -Well done-keep up the good work.

Table 6.1: Overview of the Clydebank Blitz Reports

It can be seen from the table that in terms of completing the six elements asked for, boys and girls in this sample were on a par, completing an average of 4.5 elements each. Only Group4Girl2 had completed all elements. Only one element was completed by all children, “**What was the blitz?**”. The most frequent element not to be completed was “**What was Clydebank like before the blitz?**” with five children leaving it incomplete, followed by “**Where is Clydebank?**”, which remained uncompleted by three children. Two children had left “**When was the Clydebank blitz?**” uncompleted, one left “**Why did the Germans choose Clydebank?**” incomplete and one had not completed “**What was Clydebank like after the blitz?**”. Of the five children who gave an answer for “**Where is Clydebank?**”, five used a picture (in all cases a map), and three of those five also used a textual description alongside the image.

Each report was subject to further content analysis to assess the quality of the answers that children had written or otherwise included for the six elements asked for. The findings are detailed question by question in the table below (Table 6.2). Explanations of the criteria used to judge the quality/relevance of each piece of information are given after the table.

Question	Text included in answer	Quality/relevance	Images included	Image relevance
<i>Where</i>	Group2Girl1 correct location GOOD Group4Girl2 correct detail of location and shipyards GOOD Group1Boy3 correct location GOOD	3 attempts 3/3 GOOD	See maps below	See maps below
<i>(map?)</i>	n/a	n/a	Group2Girl1 Googlemap Group4Girl2 hand drawn Group5Boy2 aerial map Group1Boy3 schematic Group6Boy1 Googlemap	5 attempts 5/5 GOOD

<i>What</i>	<p>Group2Girl1 Clydebank and London OK</p> <p>Group2Girl3 2 paras about London BAD</p> <p>Group1Girl1 about Britain as a whole + London BAD</p> <p>Group4Girl2 air raids, destruction, casualties GOOD</p> <p>Group5Boy2 2 paras about London BAD</p> <p>Group1Boy3 1 para about London BAD</p> <p>Group6Boy1 1 para–muddled OK</p> <p>Group5Boy11 para definition+para on effects GOOD</p>	<p>8 attempts</p> <p>2/8 GOOD</p> <p>2/8 OK</p> <p>4/8 BAD: London</p>	<p>Group4Girl2 1 photo of bombed street titled “The Blitz”</p>	<p>1 attempt</p> <p>1/1 GOOD</p>
<i>Before</i>	<p>Group1Girl1 how nice it was OK</p> <p>Group4Girl2 ships and industry with names and places GOOD</p> <p>Group6Boy1 describes a nice place and boats being made there OK</p>	<p>3 attempts</p> <p>1/3 GOOD</p> <p>2/3 OK</p>	<p>None</p>	<p>n/a</p>
<i>After</i>	<p>Group2Girl1 effects and figures for casualties GOOD</p> <p>Group2Girl3 correct but no specifics of place/people OK</p> <p>Group1Girl1 1 para about during the attack. Seems entirely copied GOOD*</p> <p>Group4Girl2 how people left town, buildings that remained/did not GOOD</p> <p>Group5Boy2 1 para about effects and a memorial copied verbatim GOOD*</p> <p>Group6Boy1 1 para not very specific but does</p>	<p>7 attempts</p> <p>5/7 GOOD</p> <p>2/7 OK</p> <p>lots of copying</p>	<p>Group2Girl1 2 photos of destruction, 1 rescue, 1 queue</p> <p>Group1Girl1 1 hand drawn: bombed tenements</p> <p>Group4Girl2 3 photos of bombed buildings+trams titled “The aftermath”</p> <p>Group5Boy2 3 photos of destruction, 1 of rescue</p> <p>Group1Boy3 3 photos of bombed out buildings</p>	<p>5 attempts</p> <p>5/5 GOOD</p>

	mention boats and buildings) OK Group5Boy1 about evacuation. Entirely copied GOOD*			
When	Group2Girl1 dates for Clydebank and London GOOD Group2Girl3 dates for London and Coventry only BAD Group4Girl2 correct dates GOOD Group1Boy3 dates for London only BAD Group5Boy2 correct dates but copied GOOD* Group5Boy1 correct dates GOOD	6 attempts 4/6 GOOD 2/6 BAD: London/Cov entry	None	n/a
Why	Group2Girl1 including stats GOOD Group1Girl1 1 para about weapons factories and food deliveries GOOD Group4Girl2 1 para about reconnaissance and the factories/yards GOOD Group5Boy2 1 paragraph but copied in full. GOOD* Group1Boy3 1 para London info BAD Group6Boy1 same as Group6Boy2 about boats OK Group5Boy1 about boats+link to "Rashning" GOOD	7 attempts 5/7 GOOD 1/7 OK 1/7 BAD: London	Group2Girl1 1 hand drawn local landmark crane Group4Girl2 1 photo of London tube + 1 photo of fire at unidentified location	2 attempts 1/2 GOOD 1/2 OK

Table 6.2: Clydebank Blitz Results of Content Analysis of Reports

The following judgment criteria were used to classify how well children fulfilled each part of the task.

- **GOOD**=correct information that answers the question, is specific, is in own words.
- **GOOD***=correct information that answers the question, is specific, but not in own words.
- **OK**=correct information that answers the question but is lacking in specificity.
- **BAD**=incorrect information or, information that is correct but that does not answer the question.

In general, where they had attempted the question, boys and girls had done equally well as girls at finding relevant good quality information but boys had been more prone to copying information verbatim rather than rewording it as required by the guidelines. There were no significant differences in which questions had been completed by girls and which by boys.

Where is Clydebank (map?)

This element was done best of all six elements with 5/8 children attempting it and doing so successfully. Including an image of a map seemed to be preferred to actually writing a description of where Clydebank was, with all five of the children who completed this element using an image to do so and only three of them providing a written description to accompany it. All three of the written descriptions were correct. 4/5 of the maps had been copied and pasted from the Internet, three of those from Google Maps, with one having been hand drawn, though it was not clear what the source for this map had been. All maps were suitable for answering the question well.

What was the 'blitz'?

This was the most poorly answered question. All eight children had attempted it but only two had done it well (GOOD) with four of them having included a description that was relevant to London only (BAD). However, it is easy to see why this may have happened: nothing in the question makes it specific to Clydebank, arguably leaving it open to interpretation. Some children may have thought the Blitz as a whole was of relevance and made a conscious choice to include any information they found about it regardless of location, or, more likely, they may have not reflected on this at all. Certainly nothing emerged later in the focus groups to suggest that any of the children had given this much consideration when answering the question. Only one image was included that seemed specific to this question. It had the title "The Blitz" and was included along side some text under a heading with the same wording as the question.

What was Clydebank like before the blitz?

This question was fairly poorly answered with only three of the children having attempted it at all. Only one of those had made a GOOD job of it, the other two having included only rather general information about the place with few specifics. There were no pictures included that were relevant to the question.

What was Clydebank like after the blitz?

This question was attempted by almost all of the children (7/8). Five had done it to a GOOD standard, though three of these five seemed to be copied verbatim; the other two answers were just OK. None of the answers was rated as BAD, largely due to there being no information included that was not actually about Clydebank. Five children had included photos that were relevant (GOOD) to this question. There had been a lot of copying without rewording for this question, particularly by the boys who attempted it.

When did the blitz happen?

This question was attempted by 6/8 of the children. Four of them had written answers which were GOOD, one of these having been copied verbatim, and two were BAD due to children not using dates for the Clydebank Blitz, instead using

dates for the cities of London and Coventry and the Blitz attacks that happened there. However, the same questions about the perceived requirement for specificity that arose earlier come into play again as Clydebank is not explicitly mentioned in the question. No images were included that appeared to relate to this question either implicitly or explicitly.

Why did the Germans choose Clydebank?

This question was done fairly well with almost all (7/8) children completing it and only one getting a BAD rating by including information about London. Five of the others had done the task to a GOOD standard, and a further one to an OK standard.

Perception of Task Requirements

The findings for this section contribute to answering **RQ1** on how children perceive success in information seeking vs. adult perceptions of success. Before I move on to talking about how children and teacher appeared to have perceived the task requirements, it is worth saying something about discrepancies in how the instructions were copied down by the children in this sample. I could see from their exercise books that all eight children in the sample had copied questions and associated instructions by hand after seeing the teacher write these on the board in the classroom. Some had made errors in writing down the instructions that may have changed the intended meaning of the questions or made it difficult for them to be answered in a way that satisfied the teacher's requirements for the assignment. These discrepancies were as follows:

- Group6Boy1 had missed out or miscopied a few words of the questions or added in questions that were not asked by writing, "When did it look like after", "When was it" and "How did it happen or why Clydebank". On inspecting his report it emerged that he had not attempted to answer, "***When was the Clydebank blitz?***"

- Group5Boy2 had not written down the question “*What was Clydebank like after the blitz*” though his report did cover suitable material. The same child missed out part of a question by writing “Why did **they** choose Clydebank” but had included the word “Germans” in that part of his report and had written an appropriate answer.
- A few had made smaller errors such as writing “You are going to write a REPORT about **The** Clydebank” (Group1Girl1).

Arguably this finding shows the pitfalls of delivering instructions in this manner, even if it is also clear from my own experience of observing other information tasks both in the work for this thesis and for other studies, that giving children a list of written instructions without the sort of discussion and negotiation between child and teacher that happened in relation to this task, can also be wrought with misunderstanding.

All four boys believed that they were required to complete all of the questions while some of the girls stated that they thought that it was only necessary to complete some of the questions with some of the questions being what they described as “main” and others only secondary or optional. It was not clear how this divergence had occurred. Group1Boy3 said that he thought the questions could be done in any order (and this was clearly the case for some of the others when the reports were inspected as seen in the content analysis reported on above).

There were several dimensions to how children perceived the difficulty of the task. Some tended to see this more at the level of how easy or difficult each question was to tackle. Others were more concerned with the guidelines that the teacher had given, particularly about “good information in your own words” but also about “illustrations”, “writing, presentation and punctuation”, believing any difficulty to lie as much or perhaps more with these requirements than with the questions themselves. Taking the first of these dimensions, the questions,

boys could not agree which of the questions was the most difficult of the six. The questions ***What was Clydebank like before the blitz?***, ***What was Clydebank like after the blitz?*** and ***Why did the Germans choose Clydebank?*** were thought to be difficult. The questions ***When did the blitz happen?***, ***Where is Clydebank (map?)*** and ***What was the 'blitz'?*** were regarded as much easier by comparison.

Group5Boy1: "I think the one that says 'what was Clydebank like after the blitz?' [was hardest] ...because you needed to find out what happened after the blitz what did the bombers do how did they go away and stuff like that".

Group5Boy2: "'before the blitz" [was hardest] because you didn't know what it was like before they attacked and bombed it up".

Group6Boy1: "'before the blitz" was quite a hard one. I didn't know what Clydebank was like before and I didn't know what to do but "why did [the Germans] they target Clydebank"? [was the hardest]".

The girls thought that all of the questions were easy e.g.

Group2Girl1: "'Why did the Germans choose Clydebank". – we talked a lot in our topic work about this already so it was easy".

However, they acknowledged that actually finding the information to answer them was difficult.

Group1Girl1: "It was a bit hard to find them in the Internet. But the questions were ok".

Group2Girl1: "The questions were easy but when you go on the Internet you get mixed up because some of the information I wrote was about

London most of the information on the internet is not about Glasgow exactly it's about London and the Blitz there. So that's what I mostly found – London not Glasgow”.

In terms of requirements for the task, the teacher said that she had wanted the children to be encouraged to look at the information that is out there, to make sense of it and to put it into their own words. She also said that the process of carrying out the task was as important as the understanding. The teacher was keen to create a good work ethic and get the children to go off and be independent and not be teacher led. By getting them to carry out the task, the teacher was aiming to prepare them for going to secondary school.

Sources Used

The findings for this section contribute to the answer for **RQ3** on preferred information channels. Most (6/8) of the children had included a list of sources. This is interesting because references were not explicitly asked for when the task was outlined. The table below (Table 6.3) summarises what they had included.

Child ID	Sources listed (written as they appear in the report)
Group5Boy2	none
Group1Boy3	<ul style="list-style-type: none"> • <i>Internet website Clydebank blitz</i>
Group6Boy1	<ul style="list-style-type: none"> • <i>website for Google maps</i> • <i>website Google clyde bank bilz (sic)</i>
Group5Boy1	<ul style="list-style-type: none"> • <i>Wikipedia</i> • <i>Blitz website</i> • <i><redacted> Libarb (sic) books</i>
Group2Girl1	<ul style="list-style-type: none"> • <i>Wikipedia Google search world war 2 blitz</i> • <i>Books world war 2 and blitz library</i> • <i>Classwork topic time</i> • <i>Website Glasgow City Council</i>
Group2Girl3	<ul style="list-style-type: none"> • <i>Websites Glasgow city council</i> • <i>Books about the blitz –pictures only</i> • <i>Woodlands junior website</i>
Group1Girl1	none*

Group4Girl2	<ul style="list-style-type: none"> • <i>Internet – website Google Clydebank blitz</i> • <i>Photographs from the BBC history zone</i> • <i>Wikipedia – the blitz</i>
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Table 6.3: Sources Listed on Homework Task Jotters at End of Clydebank Blitz Reports

*On this girl’s work the teacher had added the comment “you must write down where you got your information” which is interesting, again because references had not been a stated requirement of the task. The other child who failed to list sources received no comments about this on his work.

From the table above we can see that the following sources, or types of sources were mentioned with the following frequency:

- **Internet sources** = 12 mentions
- **“website”** = 8 mentions
- **Google** = 5 mentions (of which Google maps = 2)
- **BBC website** = 2 mentions
- **Books** = 3 mentions
- **Wikipedia** = 3 mentions
- **Glasgow City Council website** = 2 mentions
- **Library** = 2 mentions
- **Nothing** = 2 mentions
- **Woodlands website** = 1 mention
- **Blitz website** = 1 mention
- **Classwork** = 1 mention

Based on the sources that children acknowledged in their reports there had been heavy use of the Internet, some use of books and library and some use of material learned in class. However, little detail about the specifics of the sites or pages that were used was listed, with a few exceptions. Certainly, no URLs are provided.

The task was part of a larger multi-week project and was assigned around week 10, therefore it was likely that some of the information required to answer the questions and complete the homework task would have been encountered at some point during the preceding weeks. The children recognised this and many of them said that they knew a lot about the sub-topic of the Clydebank Blitz before they started their homework e.g:

Group5Boy1: "I had quite a lot in the class-we did quite a lot of work on it".

Group2Girl3: "[I knew] quite a lot cos we already talked about it a lot before".

Group2Girl1: "[I knew] quite a lot cos this was the last bit of info [i.e. the last sub-topic of the main topic]"

However they did not give specific examples of the knowledge that made it into their reports. Some children acknowledged the prior activities where they had encountered this related information, often mentioning the sources or types of source from which they had learned the information e.g. discussion in class with teacher:

Group2Girl1: "The easy thing was that we talked together as a class and that Miss helped us".

From a film viewed in class:

Group1Girl1: "When we saw "Goodnight Mr Tom" we saw how they...they went into the houses and the shelters and they showed us what happened inside so we kind of felt like we knew what it was like and when the bomb fell on top of them a bit of sand came down so they must have covered it with bags of sand".

Group4Girl2: "Got some stuff from "Goodnight Mr Tom"."

Group2Girl3: "I watched this DVD in school about bombing. Miss showed us it and then it showed you about how they bombed and about the ARP wardens".

<did the information from the DVD end up in your report?>

Group2Girl3: "yes because I saw.. I got a clear picture of how it was damaged and when it started and how people felt".

Carrying out a related task in class earlier in the topic:

Group6Boy1: "we did posters [a reference to the Poster Task]".

Group1Boy3: "I think I had quite a lot of information cos in class we used books and had the chance to find out stuff and write it in our books. We could use them to do it".

During a topic trip:

Group5Boy1: "when we went to our library trip we found books about the Blitz and there was a book about the children what they did at the Blitz. We found that there".

When reading in own time:

Group6Boy1: "I had quite a lot too I was looking at books in private reading time and I found out information about the Clydebank Blitz and things like that".

Group5Boy2: "I looked at one book [during private reading time] about the Blitz and like how it was".

Regarding the wider topic of World War Two, a couple of the girls said that they had known about it beforehand. One had read about evacuation after seeing it mentioned on the curriculum outline on the school website, the other said she had seen a TV programme (out of school) about it.

Task Success

The findings for this section contribute to **RQ1** on children's perceptions of success in a task vs. adult perceptions of success.

Most of the children thought they had made a good job of the task and said they were proud of the work that they had done.

Group5Boy2: "I thought ...I'm proud of myself".

Group6Boy1: "I think I did very well, so did Group6Boy2 who I worked with- I'm proud of what I did".

Group1Girl1: "I am kind of proud of myself that I finished it because it was just done on the last day so it was a bit hard but I am proud of myself now that I finished it."

Group4Girl2: "I was quite proud of myself. I did it on the first week so I wouldn't be doing it at the last minute".

Group2Girl3: "I'm actually quite happy with what I did because even though I wasted my time using books and stuff I still got more information in my mind than I actually got on the internet cos on the internet you only

read it and then put it into your own words and then put it down/copy it down so I got more. I'm actually quite happy that I got more information".

Group2Girl1: "I'm quite proud of myself to see that I can actually produce this kind of thing you know it will help me in the future towards high school so yeah I am proud of myself".

In contrast, in the remarks she had made on their exercise books, the teacher had flagged up some misconceptions that the children had, with a number of them having included information that was either about the London Blitz or about the town/area of Clydesdale or about the savings bank named the Clydesdale Bank, none of which were appropriate for inclusion. On discussing these issues with the children during the focus groups it emerged that for a number of them these confusions remained with some unsure even about whether London and Clydebank, 400 miles apart, were different places. They also were not clear where each of these places was, nor could they really explain with confidence why what they had done might have been incorrect. When I asked:

Researcher: "So did you know that the information that you were finding was about London?"

Group1Boy3: "I wasn't sure. We could have asked the teacher".

But other comments showed that some of them had known and were fairly relaxed about including information that was not specifically about Clydebank:

Group5Boy2: "when I went on Google there was website about London and the Blitz and that – I had most information about London".

When asked how and whether they could have done the task better, boys differed greatly from girls, all of them believing that improvement to their reports would have come from having more material:

Group5Boy1: "we could have got more fascinating facts".

Group5Boy2: "could have used more websites and got more information".

Group1Boy3: "I could have written more".

Group6Boy1: "Could have put in more photos".

Whereas girls were more concerned with improving the presentation:

Group1Girl1: "Instead of rushing I should have done it slowly so that it would have been nicely organized".

Group2Girl3: "we could have maybe wrote it on A4 paper instead of our jotters. Better because it makes it more 'standing out'... it's like a book, that's got all your information about Clydebank".

Group2Girl1: "just the style of it you know how we put it in our jotters we could have made it something interesting like a newspaper article. Our own: something more interesting than just writing it in your jotter".

When the teacher assessed the reports, she used the *two stars and a wish* style of marking (see Chapter 3 Methodology for more details) though not always consistently. The full text of the comments she wrote is recorded in Table 6.2 earlier in the chapter. The teacher pointed out problems in the reports such as the inclusion of information that was not about Clydebank, which had happened in several cases, as we saw with the content analysis earlier in this chapter:

e.g. on Group2Girl1:

“useful photos, good info, but should be Clydebank not London”.

and on Group2Girl3:

“worked hard but most info is about London not Clydebank”.

and on Group1Boy3:

“you have worked hard good photos before and after the war, lots of the info is about London not Clydebank”.

She also pointed out places where children had been confused about language:

e.g. on Group5Boy1:

“lots of good info, organized, Clydebank NOT Clydesdale”.

And there were a couple of instances where the teacher criticised children for copying the information and not rewriting it in their own words, another issue that was revealed by the artefact analysis.

e.g. on Group5Boy2:

“Good effort, some Good info included, great photos, make sure it is in your own words”.

and on Group1Girl1:

“Some is written in your own words-is all of it?”.

All of the teacher's written comments involved praising effort and in many cases the amount of good information rather than just information per se.

e.g. on Group6Boy1: *"tried hard well done"*.

and on Group4Girl2: *"Lots of excellent information, you have worked hard, Good organization. Photos brilliant"*.

In interview the teacher said that she had found the reports disappointing, particularly given the in-class guidance they had at the start of the task. (NB that the teacher's interview comments review to the whole class's work rather than just this sample. However bearing in mind the spread of ability in the sample, these remarks should be of relevance to this sample also). Some reports seemed rushed, which she said was normal for this class's homework attitude and the task had been done less well than it had been by last year's class. The teacher thought that some reports did not have much detail and she noticed that a lot of information had been copied directly from the Internet without being put into their own words. Many reports had information about London, either wholly or partly, and very little about the specifics of the Clydebank Blitz, which made her think that many of the children had got used to finding things easily, so had been writing down the first thing that they found without thinking. The teacher thought that they had all learned something but that it was not focused enough and that some children with learning difficulties had got very confused e.g. confusions about Clydebank versus The Clydesdale Bank. This confusion had been an issue for some children beyond the groups reported on here and had occasionally crept into the reports of these eight with three of the children reported on here using the word "Clydesdale" in their reports and occasionally during the focus groups.

How Information Was Searched For

The findings in this section contribute to answering **RQ3** on preferred information channels. Key to understanding how the children approached the task and how they experienced it, was uncovering which information sources they used, how they looked for and found them, their reactions to what they found and how/whether the information was then used. There were some descriptions of what seem like straightforward and successful experiences of performing key word searches using Google:

Group4Girl2: "I just went to Google and typed Clydebank Blitz and it came up with lots of useful information and then put it into my own words".

Group1Girl1: "I just went on the Google and typed Clydebank Blitz and it just came up".

Despite this reported ease of searching, only rarely could children say where the information they had selected had come from, even in the most general terms, beyond it being from a book or from the library. This was the case in both the focus groups and in many of the reference lists e.g.

Group1Girl1: "It came from Google, I just typed 'the Clydebank Blitz'....can't remember what the page was called. [the information I found there] It is described really well".

One girl mentioned the challenges of re-finding information that had been found before and the way that she had found to avoid having to do it:

Group2Girl3: "I got the information and saved it on Wordart [?] so I didn't really need to research it again and find the information again I just saved it to my folder".

One child described searching online to find an existing report to use, which on finding may at first have seemed like a great coup but this boy needed help from a friend to make it work:

Group6Boy1: "I found this.. I was looking...for a Clydebank Blitz report tried to put in my own words but it was kind of tricky so I asked a friend to come and help me to see if I could [do] it right".

This child showed no sense of this potentially being plagiarism, either in the copying of another report or in the working with another boy. It is worth noting however that when the other boy's report was examined there was not much overlap between the two boys' reports either in the content therein or in the structuring or presentation.

How Information Was Selected

The findings in this section contribute to answering **RQ3** on preferred information channel. During these focus groups, only one specific website was ever mentioned by the children, the Woodlands Junior school site which is the website of a primary school in England which has been built, by an enterprising team of teachers and others, to contain information that is of relevance to children studying for school topics in that part of the UK. It was mentioned in relation to several of the other tasks in this thesis. Several of the children mentioned it in this set of focus groups and said that they favoured it for several reasons: they perceived it to be or understood it to be filled with information aimed at kids in age appropriate language, it had large amounts of information, it had information on lots of different topics.

Group2Girl3: "[I used] The Woodlands school site but I got some from books as well".

Group2Girl3: "There is information for kids on the Woodlands junior site. It comes on and then tells you lots of information about all the different topics".

Group2Girl1: "I used the Internet but Woodlands [website] put their information in simple words in that kids can understand".

The easier language may have made things simpler from the point of view of finding and understanding the information but it did have a perhaps unexpected downside for these children in the context of this particular task: the straightforward language was perceived as making it harder to put information into their own words (as per the task requirements). The result was that information was often copied verbatim instead.

Group2Girl1: "[info from the Woodlands site] It's really hard to put it into your own words cos it's [written in a] really easy [way] and I don't know how to think of that so I just copied it. I just used the Internet or Google".

A further issue with the reliance or overuse of this particular website is that (at the time of the children) doing their research, the information there about the Blitz was primarily about the London Blitz, or at very least it described the Blitz in general terms relating to its effects on the UK as a whole. The more local dimension that was required for satisfying the needs of a task like this was missing and children had the sense of 'this is a kids site, it's a school site, it's a site with information I can easily read and understand' but did not realise that the perspective that they really needed to answer the questions was perhaps missing or not developed enough on the Woodlands site in order to do so successfully. (NB the teacher refers to an over-reliance on this site in one of her interviews).

Some children favoured personal perspectives on the events:

Group4Girl2: "I found out what people felt and their opinions about after the Blitz and what it was like. They were terrified and scared cos they were having to leave home and they were scared about the children. I found a letter on Google and it was about this woman she went through the war for the first time and two of her little girls died.I thought the information was useful and worth using...useful".

But this was not always the case, with one child, as we'll see now, thinking that stories in people's own words were not of use for this task. They had found videos, audio clips or transcripts online of people's experiences or of historians or others talking about the topic but had thought that they could not use these because they were either not written or were not in prose form. This aspect of relevance is one that I think may deserve further exploration.

Group5Boy1: "I found lots of information that people said not actually written – I found lots of things what people had said about it. I did not need it cos I was doing a report".

Some children had struggled with trying to manage the difference between contemporary and historical information:

Group2Girl3: "There was a question about where Clydebank was and I was trying to search it on Google maps but it was coming up as how it is right now rather than how it was before. So that was actually quite rubbish. So I didn't really get anything for that and I tried so hard to get it".

This is an interesting comment about Google maps. This child was keen to find a map of Clydebank as it was at the time of the Blitz rather than as it is now and Google maps, a way that she knew how to find a map was not any help for this task. She conceived Google maps as being THE place to search for maps, and, even when she failed to find what she needed, seems not to have considered looking anywhere else for it nor even considered that it might be possible to

find it elsewhere. A discussion then ensued about whether a map from that time would not just be the same as now:

Group1Girl1: "You know how Group2Girl3 said that on the map it was kind of not useful for just now wouldn't the routes be the same though?"

Researcher: some of them would be the same. Do you think some of them would be different?

Group2Girl3: "Yes, you never know they might have changed it because World War 2 was a long time ago".

So there was real uncertainty among the children about whether information that was relevant at the time would be relevant now, and vice versa. The cognitive load of thinking or conceptualising what might or might not have happened in between times or what was static or what was changing was difficult to overcome when tackling this task.

We've already seen that there was a lack of specificity in some of the questions that were asked for this task e.g. were all of the questions about the Clydebank Blitz or were they about the Blitz as a UK phenomenon as a whole? Even when children had decided how specific they thought they had to be, this was causing issues and frustration. Even when children had a sense of what they should be finding e.g. because they had read something already or had heard about it in class or via another method they were finding it difficult to perform searches that would find them the exact type of images that would satisfy their information need:

Group1Girl1: "The pictures. They were just showing these houses. They should have shown the ones that had been bombed. But they never showed the ones that had been bombed".

Group4Girl2: "There were pictures but they weren't about the Clydebank Blitz. They were just about World War Two".

However, there was a sense from some that even if information had not been useful for the task per se it did help them to learn something useful:

Group1Girl1: "I found this picture and it was useless – it doesn't really show how it was bombed. But it's good for me cos I know how they used to look like. They had different buildings than now...like old".

This fits in well with the teacher's expectation for the task that it should not just be about the end result but about the exploration that they did while undertaking it. This girl gives an idea of how looking at images rather than just reading text about the topic helped her to understand what she was really researching. Reading the text had given her some understanding but only on seeing the images did she get a better idea of the situation.

Group2Girl3: "I could [tell from the pictures what was going on] because I went to Google images. It actually gives you a picture of the buildings and how they were bombed. And how they looked after they were bombed, windows and everything. It was all sort of damaged and everything. So I got a clear picture in my head that it was actually damaged".

There were some contradictory comments about the use of books vs. use of the Internet, particularly from girls. All of the girls said they had difficulties finding information on the Internet for this task and that it had taken them a long time, longer than doing a search usually would, both to do the searching and to understand what they found. Nevertheless, these two girls perceived the Internet to be clearer and more organised than books:

Group2Girl3: "...books are sometimes boring because they sometimes give you the same information and the information that you don't really need to

know but sometimes you could get something that you actually need. On the Internet it's actually quite clear of what you're trying to find. I find books more harder than Internet".

Group1Girl1: "Books might be a bit harder than Internet because we're not really sure of what's going to be in that book. When we go on the Internet we just have to type and it's a bit more organised. A bit more better than books. It's a bit harder to find books-it IS hard to find books but some books that we find it might not be exactly about what we want. It might be about the World War 2 or World War 1...[but it might not mention Clydebank]".

The main issues with books seem to be the sense that you need to read everything in them from cover to cover to find the thing that you need, and that this is too time consuming.

Group1Girl1 "Books take too long and you have to read every single bit rather than just go to the bit where the information you need is".

Group2Girl3: "you have to look through the books like read every single page and find out just the information that you actually want and then it takes up most of your time".

Group2Girl3: "[we use the Internet instead of books] so we are not wasting our time".

Group1Girl1: "on the Internet you can just click on the heading or it's like a list down the sides. You can just click on the main thing and then proper things will come up".

The boys seemed more positive about the use of books for this task and all had at least consulted them, if not actually used information from them, using the Internet for the bits they were missing.

Group5Boy1: "[I used information from books for] a quarter of it".

Group5Boy1: "I checked books and I went to the local library and checked books and I checked the Internet as well so I did both".

Group5Boy2: "I found it on the Internet but then after that I looked up some books and it gave me quite a lot of information".

Group1Boy3: "I looked in one or two books but I didn't have any information so I went on the Internet and I found lots of information on the Internet".

Group6Boy1: "I got some websites from Google maps and used some books".

and this girl describes books as supplementing the information she got online:

Group2Girl3: "I got them [books] from the library. I went to the library just for that. It's usually when I am doing topic work I always go to the library in case I can get more information there than from the Internet. I'm quite happy with it [the information I found there]. The information was quite easy".

We've already seen that some of the questions were perceived to be easy and that in fact all of them were by the girls' group. Another aspect that we've already seen that made the assignment easy was said to be the existing knowledge that they had gained in class from discussion, watching films about the war and from trips to the museum and library that they had been on in

relation to the topic. Apart from that, there was very little about the tasks that children said they had found easy. Doing the research was generally thought to be difficult.

Group1Girl1: "Researching about it. Topic search was a bit hard".

Group4Girl2: "I didn't like the research either cos it was kind of hard".

And even the media they were used to using presented them with a challenge with regard to this task.

Group2Girl3: "using the Internet it took me longer than I usually do".

There were comments about specificity and why it was important:

Group2Girl1: "You have to be specific on the Internet because you can get useless stuff there, which wastes your time if you click on them".

Many of the children mentioned the particular effort that had to be put into writing the assignment in their own words and the difficulties of avoiding just copying the material as per the instructions given by the teacher for the task. Difficulties with language level made this very difficult and quite a bit of copying had resulted. The children acknowledged this, and it was borne out by some of the remarks made by the teacher in her handwritten comments on their work. The boys in particular seemed to struggle and certainly did not enjoy the writing aspect of the task but girls had difficulty too:

Group1Girl1: "Putting it in your own words was hard because there are some words we don't know and they are on the internet.... so it's really hard to know how to put them in our words, so you just have to copy it".

Group4Girl2: "Sometimes you find different information and you find it hard to put into your own words".

Group1Boy3: "I found it a little bit hard because if you find it on the Internet, you can't just copy it, you need to write it in your own words. It's hard to write down".

Several children mentioned that they often did not understand the information that they found due to words they were unfamiliar with and several said they had to use dictionaries to overcome this.

Group5Boy1: "it was quite tricky cos you had to put it all into your own words and check the dictionary for the meanings cos some words were tricky".

Group2Girl3: "I went on Google and I typed in the questions. It came up with information about it. I picked out the best information. Some of the words I didn't really know what it meant so then I went to Google dictionary and found it out. I chose the one [piece of information] that was quite easy for me to understand".

Group5Boy2: "I thought it was hard because just like Group5Boy1 said you need to put it in your own words and you also need to like find out all the information".

Printing issues caused problems for a few of the children particularly when it came to printing images e.g. maps that they had found., so this had an influence on which info was or could be selected for inclusion. One girl said that she ended up making a drawing instead and a few children said that the need (or perceived need) to print items for inclusion had made the task stressful and delayed at least one of them in starting the task.

Group1Girl1: "I couldn't print the picture cos my printer was not working so I drew it".

Group2Girl3: "that's what happened to me. I printed some pictures but only half of them came out. That's why I did it on the last day. I wasn't able to go to the library either".

Group6Boy1: "I found it easy but the only tricky thing is I was struggling to get a map, when I decided to print I had to pay for loads of copies but by mistake my brother burned it".

Sometimes printing was a problem for more fundamental reasons:

Group1Boy3: "Don't like printing pictures because of the noise the printer makes...it's in your brain forever!"

Task Enjoyment

The findings in this section contribute to **RQ1** on success in information seeking. When asked to rate the task out of ten in terms of enjoyability, girls all gave it a similar score, averaging out at 5.5/10 (range 5-6) while boys were pretty split with 2 boys scoring it 0 or 1 out 10 and the other two boys scoring it 7 or 10 out of 10, leading to an average score of 4.5 (range 0-10). Some of the boys said they had either really liked the task because they got to spend a lot of time on the computer-even longer than usual:

Group6Boy1: "10/10 it was interesting and for once I actually enjoyed it. I got to stay up past my bedtime to do it".

Group5Boy1: "7/10 it was good- you had to type it all up and spend a lot of time on the computer".

or severely disliked the task due to the amount of writing and typing involved in both the searching and in the write-up.

Group5Boy2: "1/10 you had to go on the Internet and type so much my fingers were hurting".

Group1Boy3: "0/10 I don't like writing and it takes too long".

Girls had not liked the task at all. Two called it boring, one criticised it for being hard, and one had not liked it because it was so hard to find out the information. The only positive that any of the girls said they got from it was finding games on a website found during searching for the task:

Group1Girl1: "I think when I was trying to find out information I read some websites and they had games so I never played them at that time but it's useful cos I know the websites and I could just go and play it any time".

One girl preferred to do things on her own terms rather than being constrained by the parameters of the task and therefore had not enjoyed the task.

Group2Girl1: "[disliked] everything. Miss had like expectations from us. I don't really like that you know when people expect something from you rather than just do what you like to do best".

It was not clear how this was different from any other task but it is possible that this girl was thinking of this task in comparison to the home hobby task that had just been issued and over which the children had more control, primarily in choosing the topic on which they completed their report. When asked to rate their enjoyment of the overall topic of World War 2: The Home Front out of 10, the girls gave it an average of 4/10 (range 2.5-6.5). Boys were much more positive with an average of 9/10 (range 8-10). One girl cited the lack of ability to choose the topic for themselves as a negative:

Group2Girl1: "I don't know. It's not exactly a topic I would chose for myself to do at home. Now Miss is giving us a home topic and we get to choose".

Those who had enjoyed the topic often mentioned the trips (museum in particular) that were associated with the topic e.g.

Group5Boy1: "I'd say 9/10 because we got trips and it was fascinating".

They valued seeing the real items they had learned about in lessons:

Group1Girl1: "6.5/10 it was kind of interesting and cool to find out about. We went on some trips and I saw a real Anderson shelter, so that was kind of like amazing and fun".

*Group6Boy1: "10/10 we looked at cooking we looked at the shelters... see when we were at the museum – the phones, someone was actually talking to us!" **

*Note that the exhibit in question was not actually related to WW2 at all!

They also noted that they learned or picked up some information while at the museum that was useful for work in class or their home tasks:

Group5Boy2: "10/10 because we got a trip and we got to see how a bomb shelter was and there was lots of information on the topic".

Group1Boy3: "8/10 I liked the trips because you get to see stuff that you don't know about then after you go there you can write them".

Group5Boy1: "I liked learning. I didn't like writing".

Group5Boy2: "I liked the trips. ...I liked learning information... I didn't like typing".

Group1Boy3: "I liked the writing because you get to improve your handwriting as well".

Group6Boy1:" really liked the trips...liked the writing cos my handwriting was bad before – I think it improved".

When compared with the other topics studied so far that year, all but one boy picked WW2 as their favourite, with one boy preferring the Victorians topic they had studied earlier that year. One of the girls agreed:

Group2Girl3: "When we did the Victorian topic I found that fun because like you already knew about it you didn't really need to research that much before. Clydebank [World War Two] was just boring".

None of the girls picked WW2 as their favourite topic.

Situational and Contextual Factors

The findings in this section contribute to answering **RQ4** on the influence of context or situation on children's information seeking. Many of the children mentioned the role that their families took (or did not take) in the performance of this task and indeed it was their absence that was more remarked upon. It was clear that some children expected help from their relatives but they were often reluctant to give it for several reasons. Some said they received no help at home at all:

Group1Girl1: "It was harder [than in class] because in the class we have other people that help us".

People at home were too busy:

Group1Girl1: "I asked my sister to help but she was too busy and I just had to rush through the work and I somehow just did it".

Group2Girl3: "Sisters are too busy with exams to help".

Or believed that the children should complete the exercise by themselves:

Group1Girl1: "Our parents won't really help us because they want us to do it on our own".

Or had no knowledge of the topic from their schooling or background (or at least their children believed this to be the case).

Group2Girl1: "My parents are Asian so don't know info about the war- they didn't do it at school".

There were instances of parents helping with particular information such as this example from a girl:

Group4Girl2: "I got information from my mum about here Clydebank is- it's in Dunbartonshire".

An interesting factor that I had not reckoned on and that the teacher had not mentioned was that children often had siblings who had attended the school and, even if they had not completed exactly the same task, they knew something about the topic having studied it a few years previously.

Group5Boy2: "my brother helped me. He's older. He's done the topic before. He told me where to look and he told me some information about it".

Group5Boy1: "I got it from my sister. She's in 2nd year at high school. She knew where to get the information-she was at this school as well".

Group4Girl2: "I went on this website, my sister told me about it cos she did it in school and I went on it and it gave me more information than I had".

Children were also receiving assistance with the task that was related to the presentation rather than the finding out about the topic:

Group6Boy1: "I first wrote it out and then I had my sister to check the punctuation and stuff and then I wrote it out in my jotter and then I went to the library to look at the books and used the computer to look for a map".

It became clear that some children in the class had worked together on aspects of the task, if not exactly working in pairs for the duration, but at several points after it had been assigned. For example, a boy mentioned how his friend had helped him, at several points during the focus group.

When asked whether they usually used computers to complete their homework tasks (aside from this one) all of the boys said that they did while all of the girls said they did not. In this part of the study girls and boys said they were mostly using home computers for social media, YouTube, movies, games and music (borne out by Chapter 7 results) and spent a few hours a day online, often with restrictions in place. e.g.

Group2Girl3 "I'm not allowed to go on it or watch TV on school days. Mum is strict and thinks it will spoil our brains for the next day of school. Only go on it at weekends".

All had computers and Internet access at home. Most said they had to share computers or other devices with siblings. Two girls said they were addicted to

using their computers. The Internet was not always working at home, though it was installed in all of their homes, and not all of them had printing facilities in their houses. Half of the children said they went to the library regularly with two of the girls and two of the boys saying they regularly used the library for non-school activities such as going online to play games or to borrow novels to read. All but two said they completed it over multiple days, ranging between one day and one week. One girl said she completed the task at the last minute and so had to do it by herself with no help or support. One mentioned fitting the task around other homework but none mentioned balancing the task with any other commitments or activities.

Chapter Summary

- All children thought they had completed the task successfully and were proud of the effort made in completing it. **(RQ1)**. The teacher's comments on their work often made reference to the hard work that they had put in even if she found other aspects lacking. In her interview comments she said she had been disappointed with the work produced: it had tended to be rushed, unfocused, and weaker pupils in the class produced work that was very confused about key concepts.
- Boys and girls were equally proud of their success **(RQ1, RQ5)**. There was no gender split in terms of how many elements had been completed in total, and the quality of the information included tended to be equally good from boys and girls. Girls had tended to perform very slightly better in terms of the quality of the presentation of the report with particular regard to the structuring and the inclusion of images (from the researcher's point of view) but the teacher did not explicitly make the same distinction.

- Children thought the task could be done in any order (**RQ1**). The teacher did not make any remarks to the contrary either in the interviews or in her written assessment of their work.
- Boys thought all parts of the task were mandatory where girls thought only some were (**RQ1, RQ5**). According to the teacher, all parts were mandatory.
- Girls perceived all questions as being easy (even if they thought that answering them was not). Boys thought one question in particular was very challenging. (**RQ1, RQ5**). The teacher did not explicitly differentiate the questions in terms of difficulty either pre or post-task.
- According to my analysis, there were no real differences between girls and boys in terms of the questions that they had attempted or their performance in these (**RQ1, RQ5**). The teacher agreed.
- Children said they struggled to put information in their own words: their teacher thought they had often failed to achieve it (**RQ1**). From analysis of their reports it appeared that boys in this sample had a greater tendency to copy information verbatim. Boys mentioned more often than girls the difficulties they had experienced with putting info into their own words (**RQ1, RQ5**) though girls said they had found it difficult too.
- Boys enjoyed the task far more than girls, naming it one of their favourite tasks on the topic (**RQ1, RQ5**).
- Girls enjoyed the wider topic of WW2: The Home Front far less than boys did. (**RQ1, RQ5**).
- Girls were concerned with presentation as a quality indicator in this task. Boys thought that adding more info was of more importance (**RQ1, RQ5**), despite (or perhaps because) they had tended to produce reports that were shorter than the average for the sample.

- Girls' reports tended not only to be longer than those of boys; they also featured more images (**RQ1, RQ3, RQ5**).
- Lack of domain knowledge resulted in searches that were too general. The consequences appear to have been either the finding of no information that was deemed useful or the inclusion of information that was not specific enough for the task (**RQ2**) e.g. half of the reports contained info about the London blitz (and not just for the questions that were ambiguous about what was required in this regard) (**RQ2**). There were ambiguities in some of the questions that may have exacerbated this but the teacher seemed either unconcerned about or unaware of this (**RQ1**).
- Children struggled with issues related to the passage of time between the events about which they were searching and the present day. This was particularly the case when searching for maps (**RQ2**).
- In a few instances, the language of retrieved text required the use of dictionaries to decipher (**RQ2**) and local geographical vocabulary had led to some confusion and mistakes.
- Children did not think that they had used any information learned in class about Clydebanks in their reports but thought that a DVD watched in class and a themed museum visit had helped them to understand what to look for and write about (**RQ3**).
- Boys tended to like the task due to the computer use involved but did not like the large amount of writing that they had to do. This was also the case for typing, even though this was computer-based. They generally embraced any chance to use computers, but typing a lot was not regarded as a fun use of them (**RQ3, RQ5**).
- Searching for information was tough, even when questions were thought to be easy (**RQ2**).
- While many of them said that they preferred using the Internet for the task, as it was easier than other methods, it had still taken

a long time to find information this way and they felt aggrieved about this. A few said that using books either had not been or would not have been any quicker than using the Internet for this purpose (**RQ3**). Contradicting results found in other contexts e.g. in formal classroom-based tasks reported on in Chapter 5 and leisure tasks reported on in Chapter 7, boys in this sample mentioned using books for the task more than the girls did and were also more positive about them (**RQ3, RQ4, RQ5**).

- According to the teacher, the biggest failures of the task were the many instances of copying information directly from the source without rewording and the presence of non-specific information with the distinction between the London and Clydebank Blitz being the biggest source of error (**RQ1, RQ3**).
- A few children thought audio and transcribed info should not be used to inform their reports and therefore did not use it, even when it was highly relevant to the task (**RQ1, RQ3**). The teacher disagreed that this information was not of use.
- Children struggled to say where the information included in their reports came from and tended to provide only vague details about their sources in their reference lists (**RQ3**). In her written comments, the teacher's only criticism in this regard was to a child who had not provided references at all, which suggests the level of referencing detail that most had included was in line with her expectations.
- Websites using simplified language were thought difficult to reword (**RQ3**), which seems counterintuitive on the one hand, but clearly made sense from the child's perspective. This was a common problem as so many searches had led them to the Woodlands school website cited in relation to several other tasks, a site that is written specifically for children, in language they will understand.

- Parental help was not always available: either they had or claimed to have no topic knowledge, wanted children to work on the task using their own effort, or children had left the task until the last minute when no-one was available or willing to help (**RQ2, RQ4**).
- Some children worked well with friends or got help from siblings who had done the topic before (**RQ2, RQ4**). Among the work of the friends who worked together, little plagiarism was evident.
- Finding information for this task took longer than information seeking for personal or leisure interests (**RQ4**).
- Lack of availability/functionality of equipment influenced how and how well the task was done (**RQ4**) and discussions about access to information/technology at home confirmed much of what was said in relation to this in Chapter 7 on Leisure search. One difference was that the prevalence of regular library use, which seemed to be slightly higher in this sample than emerged in the Leisure task focus groups reported on in Chapter 7 (**RQ3, RQ4**)
- From the teacher's point of view, the task was not just about the end result, but about the independent learning aspect inherent in assigning it to be completed outside of school during the holidays. It was not clear how precisely this would be evaluated by the teacher, but most of the reports and comments made in focus groups indicated that this had happened to some degree (**RQ1, RQ4**).

The chapter reported on the evaluation of a teacher-imposed homework task carried out by **P7** outside of school time. The findings from this chapter are discussed further in Chapter 8 Discussion alongside the results for Chapter 5 on formal classroom-based tasks and Chapter 7 on Leisure tasks.

Chapter 7 Findings III: Leisure Tasks

Introduction

In this chapter I report the results of an investigation with the **P7** children in relation to their leisure time and the information seeking that they did in relation to this. The findings of a survey completed in class time are reported as well as the findings resulting from two focus groups conducted with a sample of the class. Interview comments made by the teacher regarding children's interests out of school, particular in relation to a (unevaluated here) information task on hobbies. Findings are presented in accordance with the factors presented in Chapter 3 Methodology as follows: sources used, how information was searched for, how information was selected, task enjoyment, task success, situational/contextual factors. Due to the informality of the tasks discussed, "perception of task requirements" as employed with tasks in Chapters 5 and 6 did not seem a useful way in which to look at this data so it has not been used in the analysis to the same degree as elsewhere in the thesis.

Section 1: Survey Findings

In what follows, a summarised account of the **P7** responses to the survey about information seeking for leisure will be reported. The survey text is displayed in Appendix 4 and the full results including tables and graphs are displayed in Appendix 18.

Response Rate

Of the 29 children in the class, 28 (96%) (14f, 14m) completed the survey. One child (1f) was not present on the day that the survey was completed and was not available in the remaining time of the study to complete it either. One child

(1f) missed out one page of the survey and therefore her answers to questions Q9, Q10, Q11 are not available. There was never an appropriate time to recapture this data during the duration of the study.

Summary of Survey Findings

The survey findings are of relevance to all of the research questions, with some answers being particularly pertinent to **RQ2** on support in information seeking, **RQ3** on preferred information channel, **RQ4** on situation/context and **RQ5** on gender differences.

- With regard to the appropriateness of the methodology employed, the vast majority of children appeared to have understood what they were asked in the survey. Few questions went unanswered. Few were answered in a way that indicated misunderstanding. I was on hand to answer questions as they completed the survey and noticed very few problems arising. One child had missed out a couple of pages of the survey but otherwise children had participated in all of the questions in the vast majority of cases.
- They appeared to be well connected: 96% had home computers, 93% home Internet, 88% a library card, all had mobile phones (**RQ4**).
- Girls expressed interest in a wider variety of interests than boys, naming more items in each category (TV, books, games etc.). (Of course girls may just have been keener to write more on the survey than boys cf. longer girls' reports on Clydebank Blitz task) (**RQ3, RQ4, RQ5**).
- Children were particularly keen on factual or non-fiction TV. Girls tended to be into reality TV, boys preferred sport and cartoons (**RQ3, RQ4, RQ5**).
- Many girls liked Young Adult or even Adult genres of book e.g. Twilight. Boys often named books aimed at younger kids e.g. Horrid Henry. Boys were slightly more interested in non-fiction than girls were (**RQ3, RQ4, RQ5**).

- A majority of the children said they liked playing games, but boys were particularly interested in them, particularly where online games were concerned. Girls also showed interest in online games and mentioned interest in more offline games than boys did (**RQ3, RQ4, RQ5**).
- The most popular interests for boys were football, games, swimming and films, and for girls: swimming, films, fashion and celebrities. Girls were more interested in nature, fashion and craft than boys were (**RQ3, RQ4, RQ5**).
- TV, friends, family and the web were all ways that children said they found out information about their leisure interests. Further probing showed that boys used TV to find out about leisure interests far more than girls did, and where many girls used family to find out hobby information, boys did not report doing this at all. Similarly, girls said that they knew about the websites they used due to family where boys tended to say that they knew about them via friends (**RQ3, RQ4, RQ5**).
- Internet was the most popular way to find out about leisure interests (**RQ3, RQ4**). Those who preferred the Internet said it was because it is “easy and fast”.
- Google was the most popular way to search, though many used their browser search box to do their leisure searching. Boys and girls were equally likely to use these methods with boys more likely to say that they sometimes used an alternative search method i.e. not Google or using the browser bar than girls were. (**RQ3, RQ4, RQ5**).
- The most searched for leisure interests were games, music and videos respectively. Boys searched for videos more than girls did. Girls searched more for celebrity info where boys searched more for sport info (**RQ3, RQ4, RQ5**).
- When asked to name the websites they used most often, boys and girls named games sites and YouTube as their most frequently used sites with similar frequency, where girls named social media such as Facebook more than boys did (**RQ3, RQ4, RQ5**).

- All used their mobile phones frequently, were frequent users of email and messenger/chat apps, and slightly less frequent users of social media such as Facebook (**RQ3, RQ4**).
- Boys and girls said they used messenger apps and email with similar frequency. Girls used mobile phones and Facebook more frequently than boys. Boys used Twitter more frequently than girls did. (**RQ3, RQ4, RQ5**).

Section 2 Leisure Search: Focus Group and Teacher Interview Findings

Children's experiences of and attitudes to searching for information related to leisure interests were further explored in two single-sex focus groups with pupils from **P7** and in two interviews that took place with the **P7** teacher. Single-sex focus groups were chosen due to the clear differences between the leisure interests and information seeking preferences of boys and girls that had emerged from the survey. An interview schedule for the focus groups can be viewed at Appendix 9.

The aim of the focus groups was to supplement data gathered in the survey on leisure interests and children's information seeking preferences with regard to these that was reported earlier in this chapter. It was anticipated that children's responses in the focus groups would be a good check for the validity of the questions asked in the survey. The focus groups would allow children the opportunity to give fuller and more reflective answers about the topic and would also allow them to talk about what they thought was important rather than being confined by the guidelines that were necessary in designing the survey. Both focus groups took place in the week after the children had completed the hobbies and interests survey that was reported on earlier in this chapter. The boys' focus group took place the same day as the girls' focus group with a short break in between.

At this point in the study children would already have participated in at least one focus group (for the **Poster Task** and/or the **Clydebank Blitz** Homework task) and so would have been used to the format and my approach to it, and would also have been used to the idea of their contributions being audio recorded. In common with all of the focus group sessions reported on in this thesis, these focus group sessions took place in a room close to the usual classroom of the children. The door was closed to allow privacy: there was little background noise or other disruption and the sessions were uninterrupted by other pupils/staff.

Four boys and four girls were chosen to represent a spread of ability and personality, with the teacher helping to inform my decision about how best to form groups that would be representative as well as allowing the best chance of ensuring maximum participation from the children. Care was taken to invite a child from each of the topic work groups to ensure good representation and this was largely achieved. Involved in the boys' focus groups were: Group1Boy2, Group3Boy2, Group4Boy2, Group4Boy3 and in the girls' focus group, Group1Girl2, Group2Girl3, Group3Girl1, Group5Girl1.

The findings reported here are based on transcripts of audio recordings made at the time of the focus groups and handwritten notes made while conducting the focus groups. An audio file of immediate observations and reflections was also recorded following each of the focus group sessions. Children came to the sessions empty handed and were not required to create or interact with any written or other materials during the focus group sessions, because, unlike the other focus groups sessions, these were evaluating a task for which there was no specific artefact produced. It made no sense to use, for example the completed survey data in this way i.e. as artefacts as the questions were too many to synthesise in a way that would not confuse and distract. Also, because there had not been sufficient time to do this before the focus groups took place. The findings reported here are organised according to the analysis factors used

throughout this thesis and references are also made to the five research questions to which these relate. However, it is **RQ4** on the situation or context of the information seeking that is of central importance in this chapter and was the motivation for the undertaking of these focus groups.

The focus groups were very relaxed sessions near the end of term and children were very open in their discussions of the issues, including being critical of the topics they were studying, admitting not always doing what the teacher said and betraying a lack of interest in books that was counter to what the teacher and others in the school expected of them. During the focus groups, something unanticipated occurred. Children spoke about their experiences of carrying out a task of which I had previously been unaware (as it was not part of the WW2: The Home Front topic). This was a homework task that involved researching and writing a report about a favourite hobby or interest. Children also spoke, without being asked, about their experience of the **Clydebank Blitz** Homework Task reported on in Chapter 6. Both of these aspects of the focus groups findings are discussed in their own subsections. The chapter concludes with remarks from the teacher and a short summary.

How information is searched for/how information is selected

The findings in this section contribute to answering **RQ3** on preferred information channel. There will be further discussion of the **Sources used** by these children later in this section. Early in the focus groups a number of questions were asked with a view to establishing what the children were interested in as leisure activities and to also begin to get a sense of how the children went about finding out about them and how that information, when found, was used. Children had mentioned a variety of leisure interests and described ways of looking for information about them that involved a variety of different types of information sources. In what follows we see the Internet being used to find Music, Games, Cars, e-Commerce and Cooking:

"I am into music. I get information about my favourite singers from Wikipedia". (Group2Girl3)

*"I go on YouTube for music and movies and go on to Facebook".
(Group3Girl1)*

"I Google for information about singers, use wiki, go on YouTube for the actual music". (Group5Girl1)

"(I like) Miniclip (games site). When you search it's the first name that comes up" (Group1Boy2).

"Google pictures of cars and then copy and paste them". (Group3Boy2)

"Find stuff on eBay for me". (Group4Boy3)

*"I like eating! I look on the Internet to find recipes for cakes and scones".
(Group2Girl3)*

Television being used by a boy to find out about Sport (adding further evidence to **survey** finding):

"<I like Football and I find out about it> From TV". (Group3Boy2)

Books and magazines for finding out about topics and for reading for pleasure:

"I find out information from magazines. I like books". (Group3Girl1)

"I like reading biographies". (Group2Girl3)

Finding out about one medium by using another:

"If I am reading a series of books I go on Internet to find out about the next one". (Group1Girl2)

"<finding out about magic tricks> Books oh and use eBay to find tricks and books". (Group3Boy2)

When asked what they wanted to know about football, a topic they had already expressed an interest in during the focus group, one of the boys said:

*"Scores. Watch matches for free. Learned this from E****". (Group3Boy2)*

And another made the, at first glance, amusing comment:

"From our brains". (Group1Boy2)

But in both of these comments the sense of people being information sources as comes across very strongly, whether it be themselves or others that they know. In addition to this more general sense of people as information sources, the concept of certain children being experts in particular topics emerged. This finding really only emerged in the boys' focus group and seemed to be, if not an in-joke exactly, at the very least something that was common and well established tradition in this group of boys. Many of these children would have known each other since early childhood and would know each other's skills, personalities, abilities and reputations well.

"You find out from someone who really knows about it". (Group3Boy2)

*"We ask E****. He's the football genius". (Group1Boy2)*

"Someone else in the class is the Star Wars genius". (Group1Boy2)

"Group4Boy2 (actually involved in the focus group) is the Microsoft expert". (Group4Boy3)

when probed further, it seemed this Microsoft expertise had been passed on by another expert adding to this sense of expert tradition:

*"I look at the computer with my dad and learn things on there".
(Group4Boy2)*

Further findings related to this idea of working with others to find out information are revealed in the next section.

Contextual/situational factors

The findings in this section are particularly related to **RQ4** on contextual and situational influences on children's information seeking behaviour. There is also evidence here related to **RQ4** on support in information seeking. One of the key contextual factors in children's information seeking that emerged was the other people who are present and or available while that information seeking is taking place. The children spoke openly about their use of computer/Internet resources and clearly there were many instances where other people were involved in this. Family members were those who were most often mentioned, which is perhaps only to be expected in the home setting, but it was clear that online searching activities were also happening at the homes of other family members and also at the homes of friends or with friends who visited the children at home. A few children were keen to stress that they did online activities alone:

"I do it by myself". (Group5Girl1)

Or were developing their online/computer skills by themselves:

"I teach myself on the computer". (Group4Boy3)

And some were keen to stress that they did some of their online searching solo but were sometimes joined by other people:

*"At home I go on myself but brothers and sisters come on too".
(Group3Boy2)*

"I mostly do it on my own but sometimes I ask my dad if (when) I need any help. Or I do it with slightly younger sister". (Group3Girl1)

"My mum sometimes helps me". (Group1Girl2)

Children explained how family members were their way of knowing about particular sites:

"I know about (a games site) it from my cousin". (Group4Boy2)

and that sometimes the online searching activities were taking place outside of the parental home at another family member's house:

"At my cousin's house". (Group4Boy2)

Sometimes there were features of the particular settings that made children conduct their searching and other online activities in a way that would not normally be the case. They had a real sense of this difference and were relaxed about being flexible in this way:

*"I sometimes do searches in Pashto rather than English at my neighbour's house because that's what she speaks and that's how she does Facebook"
(Group2Girl3).*

(Researcher's note: when asked, all of the children involved in this study said that they did all their web searching in English when at home. Throughout the course of the study, only one non-English language information source was mentioned by any of the children "songs.pk" a Pakistani music website).

We have seen so far that, much as they had done in response to the leisure survey, children reported performing different information tasks and using different sites or types of sites in the home with different people. It also emerged quite strongly that children, while sometimes being helped by relatives and friends to do tasks or activities online, were also helping others, parents especially, to perform information tasks online. The children showed a sense of understanding their helping role in this, or at least saw those online activities that they performed with someone else as something that was mutually beneficial.

"I also help mum and dad with the computer. Don't help mum to find stuff but help her to do stuff on Facebook. Help dad doing formatting".

(Group4Boy3)

"I helped my dad look for a job and I helped my mum and dad look for a new house and we looked through houses together. My dad knows how to do it himself though – he's done a course in computing". (Group2Girl3)

Although some of this was not entirely altruistic:

"Find out stuff for mum – what PS3 to buy me". (Group1Boy2)

As well as those with whom they were interacting outside of school in their information activities, friends at school were influencing children's understanding about access to information technology and it was the topic of some debate for some children:

“Learned to do a lot of it at school or figure it out myself. We argue in the playground about virus protection and things”. (Group4Boy2)

Many websites being restricted or unavailable/blocked at school and technical infrastructure or facilities being poorer at school than they generally are at home, meaning that at home, the Internet could be and therefore was more relied upon:

“Big difference between home and school is that we just do simple stuff at school. Teacher only allows us to use a few websites. No YouTube allowed. It’s so slow. It’s easier at home. At home I use the computer, whereas I use anything at school including books, including the computers, which are really slow”. (Group4Boy2)

Task success

The findings in this section are of particular relevance to **RQ1** on how children define success in information seeking. Children described issues around finding out information that were common to all settings and to all task types i.e. home and school, leisure and topic search. These issues interfered with the success of the tasks undertaken. For example, frustration with being presented with lots of things of no relevance to what is being looked for.

“The hardest thing to find is the thing you are looking for. You can find everything you are not looking for. If you type in Mary Queen of Scots it comes up with “Mary Queen of Scots BIRTHDAY” or “Would you like to buy her autobiography...?” (Group1Girl2)

Difficulties and frustrations with re-finding information for a task:

“What I really hate is when you are lookin for something and then you find and then you can’t find it again. Cos it’s something you need and you can’t find it”. (Group3Girl1)

Information that can’t be used due to content that is technically incompatible or unstable:

“Some of the websites have viruses on them and some have things that aren’t true on them”. (Group2Girl3)

Seemingly deliberately inaccurate or misleading information online:

“I find that (things online not being true) all the time. I went on to a horse site that said that unicorns are real!”. (Group3Girl1)

Inaccurate / non-current information due to the age of printed material (in the case of books at home in this instance).

“I have the RSPCA book of horses. It’s a good book but it’s old so some of the dates are old. Some of the information in the book is out of date. It tells you to do things that you shouldn’t do any more”. (Group3Girl1)

Difficulties in using online information due to restrictions that are beyond the control of child, parents or school.

“It’s really difficult to find photos of the most famous horses because they all have copyright on them”. (Group1Girl2)

Sources used

As we have already seen, the children had very definite opinions about the different resources that were available to them and were unafraid to share

these. Results related to these attitudes will be explored further in this section. While an age-based comparative analysis is not possible due to this data collection having been done with **P7** (11-12 years) there are some insights that are relevant to research question **RQ3** on preference of information channel. The Internet was not necessarily viewed as all-important or powerful.

"I think the only thing the Internet is good for is Facebook". (Group2Girl3)

And sometimes the purpose of using a particular type of online resource might not be its primary one e.g. using a social media site for playing games:

"I only like Facebook. Because you get to play Scrabble". (Group3Girl1)

A good deal of discussion with both groups was focused round the utility of and access to books. The girls were far more positive in attitude about reading books for pleasure than boys were. All four of the girls in the focus group agreed they liked reading, for pleasure with two saying they loved it. The pleasurable aspects were mentioned:

"I like reading information books on horses". (Group1Girl2)

Educational aspects, sometimes even learning unexpected things:

"I was reading a book about horses and it taught me about frogs because there was a whole chapter about horses and other animals". (Group3Girl1)

Experiencing a book in a way that seems very like another medium:

"I like reading because it's like a movie in my head, you can use your imagination". (Group2Girl3)

This boy, by contrast, wished books to actually be another medium:

"Books are useless. If you want to read Harry Potter you should be able to buy it on the Internet and then it just comes on there". (Group3Boy2)

All four of the boys in the focus group showed some negativity about books. This comment was about books, but it is unclear whether it was also the case with regard to other written media.

"I never read". (Group3Boy2)

However, note that earlier, one of the boys did say that he used books and looked to buy them for learning magic tricks. Children were encouraged, indeed required to read for pleasure by the class teacher and were supposed to take books home from school for this purpose. Clearly some were going unread:

"I keep taking reading books home then never read them". (Group4Boy2)

And one girl acknowledged that the books available at school for reading for pleasure were not necessarily ones that were to her taste:

"We never get information here (at school). The books that we read, they don't have them here (school). Get them at the library instead".

(Group5Girl1)

Note that in the survey responses, "reading novels" scored very low overall with the class, in the variety of activities offered though some of the girls picked the Fascinated or Very Interested option and many had chosen fiction titles as their favourite books in the survey.

One girl mentioned using or going to a library and praised it for allowing access to multiple resources including online and the flexibility of being able to make requests for books.

“Usually go to the library but mostly go on Internet. Sometimes look at the books, sometimes borrow them, mostly borrow. It’s a really good library and you can order books and even if they don’t have it they buy it for you”.
(Group2Girl3)

NB two other children, a girl and a boy, mentioned libraries in relation to the transition to high school. The big school library (or the library of the big school) was seen as something to look forward, particularly in its role as a social space with access to good IT equipment/Internet.

“There is a library with computers in it and after school you can hang about in it”. (Group2Girl3)

“At high school it’s going to be easier because it’s bigger and there’s a school library and the computers are faster”. (Group1Boy2)

Though sometimes they valued books for unexpected reasons and could identify particular texts that were best suited for the purpose:

“I like reading something that will bore me because it helps me sleep. I’ve read a Dalgleish biography about 12 times because that’s boring”.
(Group5Girl1)

While a boy gave a similar reason for his dislike of books that was deemed less useful:

“I hate books they make you go to sleep”. (Group3Boy2)

The girls were shocked when I suggested (from what I knew from both the earlier focus group and from survey answers, keeping the sources anonymous) that there were boys in the class who said that they either read very few books or even that they almost never read books.

"Shame on them"! (Group2Girl3)

"That's just boys". (Group1Girl2)

"Boys are lazy". (Group3Girl1)

Films were a valued information source for learning facts about hobbies:

"I learned a lot about horses from films". (Group3Girl1)

For learning (through seeing how to do) physical skills:

"Films teach you how to do things like martial arts moves"! (Group5Girl1)

And TV for similar reasons:

"Gymnastics: you need to find out different moves". (Group1Boy2)

Film/TV were also valued for more philosophical reasons:

"Movies can teach you how to go on with life no matter how hard things are, like that one that was about the blind man". (Group2Girl3)

Additional findings: restrictions in information seeking

In this section findings related to **RQ2** are introduced, though again of course, it is not possible to perform age-based data analysis as data was only collected for **P7** (11-12 years). We have already seen earlier in this section that children were often either supporting or being supported by other people in their information seeking. It also came out very strongly during both focus groups that children had a keen awareness about being restricted in their use of

resources due to parental concerns about suitability, age appropriateness and online safety. They had the following to say about the sites they were/were not allowed to use and which were restricted or had to be used only or mainly in a supervised way, much of it relating to the use of social media:

"Bebo, Facebook, msn, email, have to be supervised all the time, no YouTube". (Group2Girl3)

"<I'm not allowed to use> Websites that are not suitable and websites with adverts and surveys to buy things". (Group3Girl1)

"I use Facebook and so they (Facebook) think I'm 16. I clicked on something about a dating service and something awkward happened so I am not allowed on that but I didn't know what it was. I thought I was logging into Club Penguin". (Group1Girl2)

"Not allowed on bad websites or 18+ sites. Don't talk to strangers". (Group1Boy2)

They had a sense of what might be harmful from a technical point of view:

"Never ever accept any ad that come up on any website". (Group1Girl2)

And acknowledged that unwanted content often appeared when online:

"<something bad is> when you're on a game site you get adverts for other stuff". (Group3Boy2)

However, one child expressed little concern about such matters and claimed to have complete freedom in their information access and use at home:

"No restrictions". (Group5Girl1)

One child hinted that he had more freedom in his online interactions than his family realised due to gaps in language and understanding:

“At home I’m not allowed on everything. Bad games for example. Swearing is bad, violence is ok. No-one in my family knows what it (the swearing) means”. (Group1Boy2)

And some said they had access privileges one might perhaps not expect e.g. two boys said they had their own eBay account, contrary to eBay’s registration and use policy.

A challenge of information tasks done out of school, whether leisure or school related is the need for children to be somewhere safe, which often means in the home itself. The Internet can play a role there but it does mean that access to book information can be less available:

“I don’t go to the library because I am not allowed anywhere on my own. So normally I go on the Internet”. (Group2Girl3)

Further situational and contextual factors

In this section many of the findings are related to **RQ4** on how the influence of context or situation impacts on information seeking behaviour. Despite the explicit focus on leisure interests of the focus groups, insights about the information environment at school were gained and these led to a discussion about how this might differ when they went to secondary school in a few months’ time (as previously mentioned, the **P7** children who took part in this study were in their final year of primary education). Issues around the transition to secondary school study were explored, including how the children thought the secondary school tasks and environment would contrast with their primary school experiences. Generally speaking, children were negative about

their access to online resources at primary school and thought that this would improve when at secondary school. There was a good deal of chat about the lack of availability or opportunity in the use of information technology in their current classroom:

“In the class – we hardly use computers. I haven’t been on the computer once this year and I’m not exaggerating”. (Group2Girl3)

There was a real sense of grievance about this:

“You only get five minutes on it. Last year we got ICT and we had all the laptops set up and I got so much.... this year I’ve been on it only a couple of times for the topic work but for ICT lessons I haven’t been on it once. We don’t do IT lessons any more. It’s bad because IT is really important. Another class went into the room where the ICT and library was. I don’t know why we don’t get it because other classes do. The laptops come round on a trolley and they said we’d get that. We never got it”. (Group5Girl1)

These negative comments about recent primary school experiences contrasted strongly with how they perceived secondary school would be. There were positive comments about the structure, environment and facilities at secondary school:

“Good. You get study leave if you have exams. There are more computers. There is a library with computers in it and after school you can hang about in it”. (Group2Girl3)

“At high school it’s going to be easier because it’s bigger and there’s a school library and the computers are faster”. (Group1Boy2)

When it came to more general thoughts about the move to secondary school the opinions of the girls contrasted very strongly with those of the boys. With

relevance to **RQ5** on gender, girls were very positive and clearly looking forward to going to the new school while boys were more apprehensive about workload and what they perceived as a far more focused or intense study environment. There were some positive general comments from girls about how it would be:

"Different!" (Group2Girl3)

"Lovely!" (Group3Girl1)

And comments about the tasks that they would encounter when at high school, both positive....

"More fun things to do. The only fun homework we've had since we've been in P7 is this one (the home hobby task) because I love horse and ponies".

(Group1Girl2)

...and negative:

"I'm scared of the work at high school. Worried about homework".

(Group4Boy2)

Many of the boys had similar concerns about workload and level of difficulty:

"Tasks will be harder and you'll be under more pressure for exams and teachers will be more strict". (Group3Boy2)

So it can be seen that children had a sense of the work required at secondary school being different in several ways from that which they had encountered at primary school, and that they did not feel prepared for it, particularly in the case of the boys.

Home leisure project (hobbies)

In the course of the focus group discussions, the children mentioned that they had recently been assigned a home project to do about their hobbies. This was serendipitous from the point of view of the research being undertaken for this thesis as it meant that children had immediate recent experience of performing searches about their leisure interests and were in a reflective mood about this. Two of the girls were doing their project about horses, two about their favourite novels. Two boys had chosen to do theirs on football, one on the skateboarder Tony Hawks and the other on the country of Pakistan.

How information was searched for/sources used (home hobby task):

The findings for this contribute to answering **RQ3** on preferred information sources. The children mentioned using a variety of different types of information source and searching methods for their hobby projects, which are outlined here. Keyword searches on Google for websites, images, facts and figures:

"I used Google to find websites and photos of horses". (Group3Girl1)

"I looked up information about breeds and markings and about riding, world records, equipment and caring for your horse". (Group1Girl2)

"My topic is Tony Hawks – go to his official website. Google 'tony hawks official website'". (Group3Boy2)

"Just write 'football' in Google". (Group4Boy2)

Search using search engines that weren't Google:

"You can use Ask Jeeves to find out about famous cricketers" (Group1Boy2)

Use of Wikipedia (with additional help from family):

“Going to use Wikipedia. Pakistan is my topic, you can ask your mum or use Wikipedia. Wiki(pedia) is best” (Group2Girl3)

Using multiple books, both at home and at/from school:

“<horse information>...came from a book I had at home and from another book that I’ve got in my schoolbag”. (Group3Girl1)

A challenge of the home hobby was related to the need to find the right resource and to have access to it (when others were not using it perhaps). This was particularly the case with book resources. Children expressed frustration about using books and not being able to find everything in one (here talking about their experience of doing another task):

“Some of the books have the information that you need. But some not, if I was doing something about horses then the Anne Frank diary wouldn’t particularly help me. When we were doing our stuff about ww2, we needed stuff about ARP. In the 2 books we had about ww2 one that had nothing about ARP and the other had mostly the whole book about ARP”.
(Group1Girl2)

A sense of the content of some books being of more use than that of others depending on their format and reading level.

“Some have more pictures; some have more clear writing and are more useful. Ones with pictures are better, a bit clearer. Some books are more useful to you than others”. (Group5Girl1)

And frustrations about having to look in multiple books for information for one assignment:

“Some books only have one topic in it. It’s easier if you get one big book that’s got everything in it and you can just go to the contents and then go to the right page. Difficult having to find more than one book if each book is about only one topic. If it’s a book about one topic then you have to look through the book. It’s hard if you have to look in one book for something about blackouts and then in another one for something about air raid shelters”. (Group4Boy2)

While it was not the subject of specific study for this thesis, given the findings that emerged about the home hobby task from the perspective of the children, it seemed worthwhile to also ask the teacher about how well this task had gone. The findings are below.

Perceptions of task requirements/task enjoyment

- The children tended to know a lot more about the topic already-it was more relevant to them than other tasks.
- Children had more enthusiasm about this task than they had for other school information-seeking tasks.

Task success (home hobby task)

- She thought that choosing their own topic made a massive impact on how well they had done the task i.e. they’d done a much better job.
- Even low achievers had done this task well.
- Children had produced longer reports than they did for other analogous homework tasks and the reports produced were more detailed.
- The reports had better presentation than for other homework tasks.
- The reference pages that children had included in these reports were better than those included for other homework task reports.

Sources used

- Children had visited a lot more websites in order to complete the task than they had for other homework tasks.

How information was selected

- The quality of the information in the reports for this task was better than for other homework tasks.
- Far less information had been copied verbatim from the Internet than had been the case for the Clydebank task for example.

General comments on homework tasks (Home hobby+Clydebank Blitz)

While the focus groups were aimed primarily at exploring search related to hobbies and interests, inevitably, given that so much of the discussion was focused on home searching, other information tasks that were done at home were mentioned too. We have already seen the children's comments about the hobby task. The **Clydebank Blitz** task, reported on in Chapter 6 also attracted some mentions during the focus groups, which allowed for the gathering of more perspectives about that task. The children's feelings about the task were overwhelmingly negative and there were audible groans when a child mentioned it during the girls' focus group.

The children went on to talk about homework tasks in a way that did not distinguish between the home hobby and **Clydebank Blitz** tasks. These findings are reported in what follows below. Procrastination was often mentioned in relation to these tasks with children openly saying that the perceived difficulty of the task stopped them from doing it:

"Home topics....I find it hard to find things so put off doing it. Everyone has put off doing this work". (Group1Girl2)

Evidence relevant to **RQ2** on support and **RQ4** on contextual and situational factors was collected. One child reported the delay in doing these tasks being

partly due to technical issues, however several more of the children expressed regret at a lack of self-discipline in getting around to doing the tasks outside of the formal school context, which was even causing tensions at home:

"I hate the home topics because I don't keep up with them and I leave them to the last minute and now my Internet connection has gone wonky as well so I'm not going to be able to get my homework done". (Group5Girl1)

"It's different at home. I normally do it by myself but (at home) normally my mum helps me but because I have left it to the last minute she says it's my own fault and she won't help me any more because she gets stressed out". (Group2Girl3)

So it seems that some parents are helping with homework tasks as well as leisure information seeking at home. Children reflected on the impact of availability or lack thereof of what are thought to be the most useful or only resources that are going to be useful for a task done at home:

"If you find a book at school that's really good for your home topic you can't because it's my "home" topic and I'm meant to do it at home. It's not". (Group1Girl2)

When talking about the homework tasks, there were several instances where children made statements that revealed their opinions about how searching for information at home compared or contrasted with doing the same while at school. They mentioned access to fewer resources at school combined with a lack of time in class making home searching easier:

"Easier to look for information at home. At school we get less time. At home we have everything. We don't get time to do it here (at school). You've got more things at home that you can use. You can't buy things through the school but you can buy things at home". (Group2Girl3)

One boy had a solution to the dislike of reading for the task and explained what he used in order to overcome the need to read by using audio. His explanation hints at his sense that you need to access information somehow, it's inevitable. Humans just need information for things, so why not do it in a way that makes more sense for you?

“An easy way to read is to use text to speech and then it reads it out to you. Then you don't have to read it. You just cut and paste it. It would be better to have books on the computer so you could do this”. (Group3Boy2)

Section 2 Summary

The findings from the two focus groups can be summarised as follows:

- Children reported searching in connection with their leisure interests using the Internet, books, magazines, television, and via family and friends (**RQ3, RQ4**).
- When they described searching online for leisure purposes, if they mentioned a method, it tended to be Google (**RQ3, RQ4**).
- They described use of adult-oriented websites (in contrast to sites aimed particularly at children) such as eBay, Wikipedia and social media sites such as Facebook and YouTube (**RQ3, RQ4**).
- The most commonly mentioned online information source was Wikipedia (**RQ3, RQ4**) and it was being referred to for leisure purposes such as information about singers and cars.
- YouTube was mentioned several times, chiefly in relation to the playing of music videos (**RQ3, RQ4**).
- In common with the survey results, boys reported using television as a key way in which to find out about sport (**RQ3, RQ4, RQ5**).

- Girls mentioned reading and looking for books more than boys did and mentioned using and enjoying both novels and factual books. Boys were less interested in books in general, sometimes being openly hostile (**RQ3, RQ4, RQ5**).
- Boys were particularly keen on the notion of their peers as experts on particular topics whom they would consult as an information source (**RQ3, RQ5**).
- The boys in particular said they had learned or were learning computer knowledge or skills from their male peers in school time about things to do outside of school time (**RQ3, RQ5**).
- At home, while there was a degree of time spent alone on the computer for most children, girls mentioned working with a variety of family members (as was the case in the survey). Boys mentioned family members too, less so but still more so than they had done in the survey (**RQ2, RQ4, RQ5**).
- Boys and girls mentioned being helped by parents while using a computer at home and a few also mentioned helping their parents to do practical tasks such as formatting a document, or searching tasks of varying complexity such as online shopping and job seeking (**RQ2, RQ4**).
- Children were very aware of the differences between home and school in terms of access to information resources. They perceived that more access restrictions were in place at school such as content filtering and firewalls but equally they acknowledged (though it was not universal) that at home that there were often certain sites or activities that they were not allowed to access. They were often supervised specifically so that inappropriate interactions did not take place (**RQ2, RQ4**).
- Some showed a good awareness of issues that might exist with online information with regard to accuracy, currency and copyright (**RQ3**).

- For a few children, the Internet's main function outside of school time was access to social media such as Facebook, in particular the games located there (**RQ3, RQ4**).
- One girl mentioned her library use in relation to using both the Internet and borrowing books, but this was the only mention (**RQ3, RQ4**).
- Children had mixed feelings about their impending move to high school, with enthusiasm about what were perceived as better facilities (all), but fears about difficulty and level of work (boys in particular) (**RQ4, RQ5**).
- They tended to bemoan their access to information resources at their current school both in terms of the opportunities that they had to use information technology and in the choice of books available (**RQ3, RQ4**).
- For a home project about hobbies they were mostly using Google to search for information or going directly to the websites of their chosen topic, as well as using books they had at home and from school. Parents were helping with this in some cases (**RQ2, RQ3, RQ4**).
- From the teacher's perspective, children were coping a lot better with and enjoying much more the home hobby task than other homework she had asked them to do and this applied to all aspects of the task, not just to the quality of the information found (**RQ1, RQ4**).
- Children contrasted their experiences of doing information seeking for their various homework tasks. The Clydebank Blitz homework task had not been viewed favourably when compared with the home hobby task but all homework was at risk of being left until the last minute, and at the mercy of potential technological difficulties at home (**RQ1, RQ2, RQ4**).
- It was acknowledged that sometimes outside of school they had access to more, or at least different information resources than at

school and there was a sense from some of a division between these two realms in terms of what could and couldn't be used e.g. a book in the classroom that was perceived as not being available for use in homework (**RQ3, RQ4**).

Chapter Summary

The chapter reported on the findings from a survey that was completed by **P7** about their leisure information seeking. It reported further on two follow up focus groups involving a sample of children from the same class. The chapter also reported on comments that the **P7** teacher made regarding this class's out-of-school information seeking. The two focus groups allowed insights to be gathered on children's preferences and experiences in their leisure information seeking, their interactions with other people to perform information tasks, their perceptions of and experiences of performing homework information tasks on topics that were related to their hobbies and on topics not of their choosing such as their current WW2 topic. In addition, insights about their preferred information sources and the boundaries and restrictions in their leisure information seeking emerged. The findings will be further discussed alongside the findings from Chapter 5 and Chapter 6 in Chapter 8: Discussion.

Chapter 8 Discussion

Introduction

In this chapter I discuss the findings of this thesis by bringing together the findings from: the formal teacher-imposed tasks conducted in class, the findings of which are detailed in Chapter 5, the formal teacher-imposed homework task conducted outside of school, the findings of which were outlined in Chapter 6 and the Leisure tasks investigation, the findings of which are outlined in Chapter 7. I discuss themes common to these findings, guided by the five research questions that emerged from my review of the literature, as well as additional themes that I developed from the data that I regarded as being of importance in understanding child information behaviour. Recommendations are made based on the findings. The findings have implications for the design of information seeking studies with children and much of the second half of this chapter is therefore spent discussing the effectiveness of the methodology employed and the tools within it, with a focus on the artefact method in particular. The chapter concludes with a discussion of the limitations of the study, both in relation to the findings, and also with regard to the methodological approach adopted.

Research Questions Recap

The five research questions investigated were as follows:

- **RQ1 How do children define success in information seeking and how does this differ from adult perceptions of success?**
- **RQ2 How does a child's age influence the amount of support that is required from others in order to complete a task?**
- **RQ3 How does a child's age influence the information channel chosen to complete information tasks?**

- **RQ4 How does the context or situation influence child information seeking behaviour?**
- **RQ5 What influence, if any, does gender have on children's information seeking behaviour in respect of each of the elements mentioned RQ1-RQ4?**

In what follows, the findings in relation to each of these questions will be discussed.

In this section I consider the first of the questions investigated in this study:

RQ1 How do children define success in information seeking and how does this differ from adult perceptions of success?

It is worth considering again how success in information seeking has been written about in the literature. Much information retrieval research, for example, has been concerned with systems-oriented measures such as *precision* and *recall*. Such measures are not well suited to describing human behaviour however, and therefore notions more related to human performance, preference and needs have more currency and resonance with regard to information behaviour. Encouraging success in information seeking tasks has long been a major concern of information literacy (Case, 2012 page 119). Wilson (1981) introduced the idea of information seeking in terms of success or failure, and, within that, the degree of satisfaction of need and the degree of failure. Further, Wilson said that we may consider that when a piece of found information is used that this is itself a measure of success. Other concepts of interest in relation to success in information seeking are *satisfaction* (or *non-satisfaction*), *satisficing* i.e. choosing the first “acceptable” answer to a question and deciding that we have “enough” information and therefore stop searching

(Case and Given, 2016 page 102), leading to a feeling of *closure* having gathered just enough data and impressions to be satisfied with the process of the task (Case and Given, 2016 page 36). Much of the empirical work related to these concepts has described adult behaviour. In what follows, I offer some insights as to how we might understand and describe success as it relates to children's behaviour in information seeking tasks.

Children's ideas of success are not concrete, and might more usefully described as encompassing a patchwork of different features and priorities.

In the literature, much of the discussion around notions of success in information seeking is linked to the ways in which humans evaluate information. The findings of this study indicate that children appear to be evaluating information in a way that is radically different to the manner in which adults do this. This, along with a number of other factors, contributes to a sense of success in information seeking for children that contrasts strongly with that observed in adult information behaviour. Children's notions of success in information seeking are not at all clearly defined, and certainly cannot be described by measures with such rigid definitions as precision and recall. Further, it appears that the behavioural concepts used to describe adult success in information seeking may not easily be applied to children and that other means of description are required. This contrasting behaviour will be the overarching theme of this section of the discussion.

There is a disconnect in perceptions of success between the teacher as task generator and children as task conductors.

Success criteria specified by teachers for information tasks does not always relate well to the ways in which children describe and quantify their own success and that of their peers in those tasks, itself an indication that children and adults may perceive success rather differently from each other. In this

study, this disconnect emerged repeatedly across multiple tasks, starkly, for example, in the **Poster Task** where groups who self-rated their posters most highly had their work rated lowest by the teacher. Furthermore, those groups who had performed well according to the teacher's success criteria tended to be very self-critical when they compared their work to that of others. The teacher and children differed again when ranking the posters of other groups, with the teacher's weakest rated posters coming out on top among the children. The teacher's reasons for low ratings tended to be due to the presence of misunderstood information, factual errors, irrelevant information and a reliance on verbatim copying of large volumes of text. Children's ideas about success in this task and in others were much less concerned with such notions, instead, they placed value on *aesthetic considerations* such as having included drawings either to frame or accompany text in order to display their art skills and making good use of colour, layout and title design to display the information. Filling blank spaces had also been prioritised in all tasks over adding quality information. Prioritisation of aesthetic considerations was common to many of the tasks evaluated, not just those that involved images e.g. a wholly text-based task such as **Rationing6** saw a great deal of focus on neatness, underlining etc. of information both while on task and in self-rating post-task. A focus on such considerations was common both to children who had achieved fewest of the success criteria and those who had achieved most of them.

Aesthetic considerations aside, children rate their success in information tasks according to many other factors. *Novelty* is very important both in the manner in which the task is done and in the result e.g. doing something that feels like a new type of activity, and the chance to find out some new information are both key ingredients. *Autonomy* is also valued e.g. a sense of having achieved something with little or no teacher support, or finding and using information from a source independent of the teacher. Children also value the chance to adopt different and *flexible roles* within information tasks. In this study, children preferred those tasks where there had been most opportunity to do this. The chance to participate in *group work* for information tasks leads to a greater

sense of success, particularly for younger children, and, while good group working is often included in success criteria, it may not always be used in teacher evaluations, despite the value and emphasis that children place on it. *Altruism* is another contributing factor to children's sense of success. In this study this was particularly evident among the younger boys who often neglected their own task work to help girls in their group with theirs. Children also report success in information tasks due to a sense of having fulfilled what they regard as the *responsibilities* of their information role. For example, in several tasks in this study, the older children sensed an opportunity (or perhaps obligation) to be information providers for other or future students of that topic, both within and outwith their group and class. This was the case even where the teacher had not made this an explicit criterion of the task. Similarly, the younger children took their role in producing fact files very seriously and were concerned that others should be able to learn from the information they had found and presented. *Relative success* is also more important in information seeking for school tasks than it might be in other scenarios, with children, particularly in group tasks and especially where older children are concerned, judging their success very much in relation to the achievements of others as seen, for instance in the **Poster Task**. This may be an element of the behaviour that lab-based studies of child information seeking might miss.

Children value *technology use* in classroom information tasks, particularly where the chance to use technology is not a usual part of the school day. Such opportunities contribute to their sense of success, even if other elements and specified success criteria of the task have been neglected. The older children in this study, especially the boys, were particularly motivated by the chance to use a computer. The teacher recognised that those children who had failed to meet the formal success criteria had often achieved their own measure of success in this way. Related to technology use, children value *interactivity* in information seeking and, while, certain behaviours such as erratic use of interactive information games and other media may appear of limited benefit to the casual observer, such activity was nonetheless part of the tapestry of factors

contributing to a sense of success in many of the tasks for both age groups in this study.

Children often do not enjoy school information tasks, even on topics that interest them. This may be related to priorities not being honoured.

A lack of enjoyment in information seeking tasks was a rather concerning theme in this study, being reported by many children in a majority of the tasks studied. Only the **Astro7** task was regarded as enjoyable by a majority of children who completed it. Enjoyment, and, by association, perceptions of success in information tasks can be coloured by *perceptions of the sub-topic* to which children are assigned, even if the overall topic is popular. For example, in the **Poster Task**, where groups had to research wartime jobs, certain jobs were perceived as “cool” and, therefore, easier to research. Being assigned a less favoured job had a demotivating effect such that a few groups seemed to give up on any chance of success almost before starting, having the sense of being given the “wrong” job to research i.e. one with which they had little affinity or that did not fit their conception of the topic. It is possible that this effect may manifest differently in younger children, but there is no directly comparable data in this study that would allow such a claim to be made. It is worth noting however, that the younger children in this study, particularly the girls, often did not get to research their first, second or even third choice of astronaut, however none complained, nor linked their performance in or enjoyment of the task to this, which suggests that younger children may be less affected by this phenomenon.

Another concerning finding of this study, linked to enjoyment, is that *task and topic design* often result in unsatisfactory information seeking experiences particularly when, in an educational context *learner priorities* are not honoured. School information tasks and, indeed, topics are often designed in ways that can greatly limit children’s sense of success. The **P7** children in this study emerged from the topic having failed to enjoy most of the tasks and having learned about few of the aspects of the topic in which they had expressed interest at the

outset. The KWL grid completed in the early days of the topic revealed that P7 knew quite a lot about the war and had ideas, often very richly expressed, about what they would like to explore within it, but, by the end of the topic, it was clear that few of these areas had been covered even in the most limited of ways and this was reflected in the negative answers that many children gave about task and topic enjoyment. The tasks did not always make good links between the ostensibly more mundane aspects of home front life and the political and military aspects that they knew about, and children struggled to reconcile the two aspects. Teachers were aware of this lack of satisfaction and a resulting abstraction, expressing regret that this was the case, but argued that they were working within the boundaries of the curriculum, in accordance with what they believed to be suitable, age-appropriate content. Clearly there are limits to the extent to which learner priorities can be honoured but the negative effects evidenced here do raise questions about the integrity and utility of exercises such as KWL and the opportunities that might be afforded by taking children's informational priorities more seriously. Other researchers have pointed to the lack of motivation that children can have towards information seeking that is imposed e.g. (Druin et al., 2010) and others have noted their increased success in tasks that are self-generated e.g. (Bilal, 2002). Might not both of these possibilities be brought together? The KWL does seem like a way of doing this, but it appears not to be properly or effectively used to achieve such aims and, in this study seemed more diagnostic in application.

Task design can also impact on children's success and sense of success in information tasks. Teachers' priorities for information tasks tend to be made explicit in task outlines and in the success criteria defined there, whether in the form of written instructions or verbal guidelines issued before or during a task. A lack of explicitness or consistency in such instructions can lead to children experiencing a task negatively or being less successful than they might otherwise have been. For example, in a task in this study, the teacher had not mentioned referencing but marked down those children who had failed to provide any. In the same task there was a failure to make explicit that all

questions referred to a particular geographic region, again, with the teacher marking down children who failed to complete the task accordingly. Meanwhile, children were unaware of these issues and believed they had made a good job of the task. *Task design*, in particular, assumptions about utility of information resources can lead to *duplication or futility of effort*, which can impact children's sense of success in information seeking tasks. For example, in this study, a number of tasks were assigned where resources supplied or signposted to were not suited for use by the children assigned those tasks. Duplication of effort arose as the same information resources children found and were evaluating online had already been provided on paper. Children's information seeking can also be compromised if teachers fail to assign tasks that are achievable or that fail to scaffold them in a way that makes them so e.g. in tasks where images were requested in this study, teachers did not indicate that printing was not available so much time was taken searching for images that were unusable without copying by hand, which rarely occurred.

In the following section I consider the second question investigated for this study:

RQ2 How does a child's age influence the amount of support that is required from others in order to complete a task?

Other researchers have argued for further investigation of the role of other people in child information behaviour e.g. (Shenton and Dixon, 2003). To answer this question and to address the developmental aspects, children at either end of the concrete operational stage (Piaget and Inhelder, 1969) were involved in the study. The associated developmental characteristics of this stage were discussed in detail in the literature review and the discussion proceeds with these in mind considering not only the help required from others but also support more generally.

Children often struggle to complete information tasks due to difficulties in getting started.

Without support or adequate scaffolding, children can struggle to get started on information tasks particularly where technology is involved. Children often require much effort and time to reach websites, even those for which they have the exact addresses, which can have a major effect on the efficiency of their information seeking. In this study, difficulties in reaching websites were observed across all tasks and in both age groups, with younger children being particularly affected. There were many instances where, in the absence of adult, or, as a minimum, peer intervention, children could move no further forward with the task. Typing even the shortest web addresses can take many minutes for primary school aged children; typing them accurately can take far longer, and the struggles in doing this were observed on many occasions. In this study, effects on the wider task were often severe with many minutes lost, at the expense of other task elements, with the result that few tasks were completed in full. Much has been written about such difficulties in previous studies as, for example (Vanderschantz et al., 2014)(Druin et al., 2010) as discussed in the literature review, and while I will not revisit those, it is worth noting that despite advances in technology, lack of accurate typing skills remains a barrier for children's interaction with much digital information much as it did decades ago, particularly for younger children, and educators should be mindful of this when designing and setting tasks. Despite reports that even the youngest children can perform query reformulation e.g. (Spink et al., 2010), the typing and spelling issues encountered by the younger age group (9-10 years) in this study meant that they were largely unable to do this to a degree that would lead to success in their information seeking without assistance from others.

Even when websites have been successfully reached, children often encounter severe problems finding and using information within those sites. They are often very easily distracted, and exhibit a great deal of scrolling-without-reading behaviour. This was observed for both the older and younger children in this

study, across all tasks and even on sites designed for children as per (Nielsen Norman Group, 2010). This was the case even when children interacted with sites designed specifically for a task for children at their stage of learning e.g. in

Rationing6.

Implication: teachers setting information tasks cannot assume that the resources provided, even if ostensibly designed for the task and age group concerned, will provide sufficient support to ensure that the task proceeds efficiently and effectively, and therefore additional support from adults may be required.

Children experience difficulties in selecting information when seeking information for school tasks, which requires support from peers and others to overcome.

Selecting information for use in information tasks presents a great challenge for children of primary school age as research such as that by (Jochmann-Mannak et al., 2008) has shown. Assistance with technical issues aside, the most frequent request for help in this study regarded information selection. Children experienced severe difficulty in selecting information in all tasks studied, with the result that they often wrote very little information down, whether relevant or not. This was the case with information from all sources, but was particularly the case where web information was concerned. This was observed during open web searching but also when sites had been identified as “good” by teachers e.g. the BBC page specified in **Rationing6** or via recommendations from other children e.g. in the **Astro7** task. While both age groups also exhibited a need for support from others in earlier stages of their searching, it was at the selection stage that the most serious problems occurred. Perhaps surprisingly, though this may be a reflection of the relative complexity of the tasks completed by the two groups, **P7** appeared to experience an equal level of difficulty to **P5** when deciding which information sources would be best for a task. The younger children however, experienced more difficulty than the older children in deciding what to use from each information source, regardless of medium. In

addition, the younger children often seemed extremely stressed on finding new information and often asked for help from adults, even if they were not particularly skilled in explaining their needs.

Children's information seeking is particularly negatively impacted by lack of domain knowledge, necessitating additional support from peers and adults.

Much of the difficulty that adults experience when searching for and selecting information is known to relate to a lack of domain knowledge. Given their relative lack of experience of the world, children tend to be even more impacted (Hutchinson et al., 2005). All of **P7**'s tasks revealed children's difficulties in understanding the overlapping and contrasting UK, Scotland and local contexts of the war meaning that searches were often weak or inappropriate and relevant information when found, was often overlooked. Lack of domain knowledge led to searches that were too general and to the selection and inclusion of information that was not specific enough. Children also struggled with temporal aspects of task instructions and information and were often unsure whether, for example, only current information could be used. Domain knowledge had less obvious effects on **P5** whose performance in making their fact files was independent of their prior knowledge of their specific astronaut, though this may relate more to the topic rather than to age. Linked to domain knowledge, vocabulary difficulties were observed in both the younger and the older groups. Some of the older children could recover by using physical or online dictionaries, often prompted by other children with this know-how, but younger children showed little sign of knowing how to do this; nicknames, acronyms, synonyms (see also (de Vries et al., 2008)) and abbreviations caused particular problems for them. Much evidence around lack of domain knowledge was revealed in relation to the films that children watched for their topic. Children questioned how documentary footage could exist because filmmaking technology was "not available back then". There was confusion about whether documentaries were made during the war, rather than much later. Some had

read *Zlata's Diary* and were unsure whether it was about the same war, and, while this showed they could relate the experiences of wartime children to those in other conflicts, it revealed further uncertainties about time, location and context of the topic. Only by asking questions of others were they able to resolve partly or wholly their questions about these contexts.

Children struggle to focus on information tasks when seeking information in the classroom without adult supervision.

Linked to the issues that children experience when selecting information, their task focus tends to be poor when unsupervised, particularly where multimedia is involved. This was observed for both groups in this study. The least focused task performances involved the use of the custom-made BBC website for the **Rationing6** task. Children used the specified page very little, playing instead with other games though only briefly, clicking around the site, writing very little or nothing at all. Less of this type of distraction was seen in the case of **P5** but this may be because they rarely used or encountered materials with such interactive content while on task. **P7's** museum-based information-seeking task revealed that children were not good at remaining in parts of the museum related to the topic, being distracted instead by items on other topics, particularly those with audio-visual elements. It was only from the intervention of adults that they remained even close to staying on task. However, such activities were often cited as the most enjoyable elements of the topic and helped to sustain interest in a way that other activities had not. Such activities may provide support for motivation in information seeking in an on-going topic while being of less utility for acquiring topic-specific information.

Children's classroom information seeking can be severely impacted by technological issues. Younger children are particularly affected.

Despite assumptions in wider society about how computer literate today's children are, difficulties in recovery from technical issues persist and can severely impact information seeking activities, particularly for younger children. Both age groups in this study experienced similar levels of technical problems but **P5** had a much harder time recovering from them. Both groups often tried to load pages for many minutes but **P5** were much less able to find workarounds in such situations and generally needed adult intervention to stop wasting further time. **P5**, far more so than **P7**, often needed help from adults or, occasionally, classmates in getting started with searches including finding a search engine never mind performing searches using it. In both classrooms there was often no adult available to ask about these issues apart from the researcher, which exacerbated these issues.

Children experience difficulties in structuring retrieved information appropriately even when guidance is given.

Again linked to *task design*, the format in which found information is to be recorded or presented has an impact on how children perform in their information seeking. The older children in this study agonised over achieving the neatness, headings and underlining specified by task criteria, removing much, sometimes the majority of the time that could be dedicated to information seeking. Unsupervised, such activities dominated their topic time, arguably to the detriment of their performance in the task. The presence of such structural requirements did not make for particularly well-structured use of information. Children struggled to do more than simply copy information verbatim, ignoring or avoiding the requirement to use their own words. While one would expect that the older children would require rather less reading comprehension support than **P5**, they in fact required regular reminders not to select information that had not been properly digested and understood, yet still failed to do so. Their focus was often on copying as great a volume as possible despite explicit and repeated instructions otherwise. **P5** also struggled with structuring the information found. Many of their fact files contained repeated

information both from the factsheet supplied and from the Internet, indicating a need for more support with structuring their answers, perhaps in the form of a template.

Collaboration with peers features heavily in children's classroom-based information seeking.

Children's success in classroom information seeking is strongly linked to support from collaborating with other children. In this study this was more the case for the younger children, though the phenomenon was observed in both groups. Without such collaboration, many **P5** fact files would have remained close to blank. Boys often supported girls by finding or directing them to information while neglecting their own work. Children were proud of their altruism, often, as we have seen already, citing it as a key reason why they had enjoyed a task. For the older children, this type of collaboration was seen less often but there were many instances of individual searching followed by swapping or sharing pieces of information with others in the group, even though doing so was never explicit in task instructions. Younger children tend to take on more roles in a group information-seeking task than do older children. In this study, **P5** appeared to be taking on all of the roles, though, some ended up acting as researchers for the rest of the group and feeding information or sources to the others who became little more than note takers. **P7**, by contrast, often took on just one role in the classroom-based task, particularly in the case of the **Poster Task**.

In this section I consider the third question investigated for this study:

RQ3 How does a child's age influence the information channel chosen to complete information tasks?

With this question, I was keen to understand more about the behaviour of children in different information situations at different stages of development. Previous studies hinted at a preference for using digital resources among children of all age groups and I was keen to understand whether this was the case and whether this preference led to better outcomes in information tasks.

Children struggle to distinguish different types of information sources and differ from teachers in opinions about their utility often downgrading the usefulness of book information despite successes with it.

While children may recall the medium used in an information task, they are often much less certain about the exact source from which the information originated. This made it particularly challenging to evaluate differences in information channel preference between age groups as per the requirements of this question. For example, in this study children would typically say that they had completed a task or section of a task “using the Internet”, or by “looking in a book” but could only rarely provide detail about the exact websites, webpages, books or book sections. Some caution is required even about children’s certainty about the medium used; in this study, children were found to routinely misreport which information sources had been used in classroom-based information tasks. This was common to both age groups but was particularly evident in the younger children, even in the minutes following the end of a task when they knew the researcher had observed them, during the task. Linked to this unreliability in reporting, children often gain more useful information from using books in information tasks than they typically report. For example, in this study, the **P7** teacher thought that the class had gained more from books during tasks, than from other sources, and more so than they realised. Indeed, even if children reported finding books “boring” or that they had not been of much use in a task, it was observed by both the researcher and the teacher on multiple occasions that they often took more information from books than from other sources and that this was often better quality information than that taken from other sources.

Another challenge of investigating children's attitudes and preferences regarding information channels relates to their difficulties in distinguishing different types of information source. Two short group tasks in this study revealed the older children's lack of skill in evaluation of information sources: they were unable to distinguish news reports from opinion pieces, and had great difficulty in understanding the content and context of photos. The difficulties that children experience in making relevance judgments on images is something that I believe merits further study. It was also clear that children had difficulty distinguishing documentary films from fiction. Children were, however, riveted by films watched in class and these had a profound influence on their information seeking behaviour and on their attitudes to the topic. Having seen an onscreen portrayal of the aftermath of bombing many were able to describe this in their homework report or used it to inform searches. Film influenced children in other ways: in a task about packing for evacuation, they chose similar items to those packed by a film character even if it made little sense to do so.

Resource availability and quality is often key to the success or failure of children's information seeking in the classroom.

A lack of in-class and online resources can seriously hamper children in their information seeking. In this study this was the case for aspects of the WW2 topic in particular. From the **P7** teacher's perspective there was a lack of support from existing classroom information resources, and this was barely improved upon following a class visit to the local library where there were few relevant, age appropriate resources available. The teacher linked the children's weak performance in tasks in part to this lack of access to pertinent resources. The **P5** teacher, on the other hand felt that there were sufficient materials to meet the needs of children working on the Solar System topic. While a box of local authority resources related to WW2 was available, this arrived partway through the topic, and could not be kept for its duration. Books provided were rather

limited in number, as were those already available in class, and there was even some duplication. Some were at a reading level beyond that at which children said they felt comfortable. The teacher agreed. The school library was not accessible, which further restricted access to information sources.

As well as the limitations of these physical resources, online resources, even those explicitly designed for the topic and age group do not always provide what children and their teachers required and often introduce additional challenges. The **P7** teacher thought that a dedicated information site such as the BBC's wartime pages would be more useful in e.g. the **Poster Task** than it turned out to be. She thought children would have been able to complete the task purely by using information found on those pages, but even using the pages with additional support from books and other information, the task was poorly done even by children who were typically strong performers. When used in the **Rationing6** task, BBC pages emerged as more of a distraction rather than anything useful for fulfilling requirements of the task.

The domination of search results by certain websites can be detrimental to school information seeking activities. In this study, a schools information website, dominated search results for the Home Front topic in particular. This resulted in what the teacher regarded as an overreliance on this source, which she felt led to a certain lack of criticality, as well as to additional problems. Information on the site was not geographically specific enough for the requirements of some tasks, relating as it did, mostly to UK-wide aspects of the war instead of the more specific Scottish aspects children were expected to focus on. In addition, while some children valued information on the site because it was written at a level that they could understand, many found that this became a barrier when trying to write the material in their own words as it was already simplified to a degree that made this difficult to do. Reliance on a non-Wikipedia site contrasts, for example with the findings of e.g. (Vanderschantz et al., 2014) who found that children tended to scan search result pages for links to Wikipedia pages and prioritise these for selection. This

may be related to a difference in language i.e. Vanderschantz's study participants were searching for information in German rather than in English as in this study, but it is difficult to be certain about this.

Security filtering can place damaging restrictions on classroom-based information seeking activities. While clearly necessary for reasons of child protection and data security, some of the filtering put in place by the local authority in which the school in this study was situated was to the detriment of enriching the learning of the children in certain aspects of the topics studied. For example, the YouTube website was completely off limits even to the teacher, as were videos on the BBC website, which meant that video content that was highly relevant to the local context of the WW2 topic could not be viewed using school equipment, resulting in missed opportunities for information access. Children had already shown that they engaged well with topical video content and locally relevant resources were already thin on the ground, so this further barrier to access was of particular frustration to children, teacher and researcher alike.

Access to and use of computers outside of school time does not guarantee success in using digital technology for school tasks. All children in this study had access to digital technology at home and all but one was connected to the Internet, with many reporting high levels of engagement with digital technology outside of school. Nonetheless, many children who took part in this study, and this was no different for the most prolific home technology users, were poorly equipped for school tasks with regard to digital skills, as evidenced by their performance in the tasks observed and in their homework assignment. Older children bemoaned the (relative to some other classes in the school) lack of access to computer facilities that they had in school. It is possible that this impacted on their skills and abilities and on their capacity to find information efficiently during the tasks. This may also have meant that when the opportunity to use technology presented itself, children were less focused on

tasks than they might otherwise have been, playing instead with games unrelated to the tasks.

Information literacy training has effects that can be seen in the classroom information seeking of those children who have experienced it. The younger children in this study had a much better sense of information literacy concepts related to evaluating online information, for example and were, in their comments in focus groups at least, less immediately trusting of information they found online. They reported having had explicit instruction in a previous year, where P7 had not, an indication that such instruction can be very impactful and should therefore be taken seriously by teachers at all levels of education. Younger children required more ancillary support such as in technological matters and vocabulary support than the older children but due to their information literacy instruction, were asking rather more reflective questions about the information they were finding than the older group often were. There was some influence of the impact of the influence of home on their information literacy such as, for example P7 children, when asked to “research” a topic, focused on using the Google “define” feature to look up the meanings of words to the exclusion of all other information seeking activity. Knowledge of this feature had been brought from home by one child and spread to the rest of the class, to the surprise of the teacher.

In the next section I consider the fourth question investigated for this study:

RQ4 How does the context or situation influence child information seeking behaviour?

Much of the discussion in this section relates to the differences and overlaps between the classroom-based information seeking behaviour of children and their out-of-school information seeking behaviour. Areas where these intersect

such as in homework tasks, and instances where the influence of home information seeking is brought to bear on classroom-based tasks, are discussed.

Child information seekers, in contrast with adults, search more often for information for casual leisure rather than serious leisure.

Children's leisure information seeking, when described in the same terms as adult leisure information seeking has some contrasts with that behaviour. Adult leisure-seeking information behaviour is often described in terms of three categories: *serious leisure* (lifelong interests/hobbies/commitments), *project leisure* (booking a holiday etc.) and *casual leisure* (playing, having fun relaxing) (Stebbins, 2009). Using this classification, children appear to be particularly active in casual leisure searching, with most searches reported in this study being of the *casual leisure* type, with a majority of these being searches for games sites, closely followed by searches for YouTube and other sites hosting video material. So, during their leisure time, children are primarily visiting entertainment websites that would general be out of bounds in school. Children are also conducting a great deal of information seeking that would be classed as *serious leisure*. In this study, searches of this type tended to be of the *lifelong interest* or *hobbies* sub-types; children were searching for and accessing sites associated with, for example, football teams, and favourite pets and animals. Children's leisure information seeking behaviour shows some intersection between the *casual leisure* and *serious leisure* categories; for example, several children in this study reported searching for games related to their hobbies. Children appear to be doing rather less searching in the *project leisure* category. In survey responses, none of the children reported searches in this category with regard to their own information needs but in focus groups evidence was uncovered, particularly among children from ethnic minority or lower socio-economic backgrounds, of children performing *project leisure* searches (e.g. searching for products or flights) on behalf of parents, with evidence to suggest that this was due in part to parental language skills, technological ability and experience and perhaps also due to parents' lack of time to perform such tasks.

Children are doing the majority of their leisure information seeking when at home. Increasingly, leisure information searching is perceived to take place in the mobile sphere and children increasingly have, or are believed to have, near continuous access to mobile devices. However, in this study, few of the leisure searches reported occurred while on the move. Searches tended instead to happen at home, at the house of a friend, relative or neighbour and, in a few instances, in public libraries. Sometimes paired searching at a friend's house that began as search activity for a homework topic led to searches for leisure purposes. Many children reported carrying out leisure searching activities with a friend or relative.

Success in out-of-school information seeking depends heavily on the in-person support available there.

Support at home is often key to successful child information seeking. Such support was reported as being central to the production of homework reports by a number of children in this study. Help from siblings was important in a number of cases as brothers and sisters had often completed similar exercises in their own school days and had insights about key facts, places to look for information, and about what and how much to include. A few children indicated that they had help from parents that was key to their success, but this was far from typical. Parents were unavailable to help due to being busy, lack of knowledge of the topic, child procrastination (meaning that not that enough time had been left for meaningful collaboration), or due to a sense that children should complete work by themselves without help.

Children use websites recommended by friends and family more so than sites found via search engines.

As discussed in the literature review, a number of researchers have indicated a need to explore children's use of people as information sources. In this study, a

majority of children reported using friends as information sources for leisure activities. Many also mentioned using family members for the same purpose. The reasons for many of searches for and decisions to choose books and websites come from the recommendations of others in a way that I believe is likely to be stronger than is the case for adults. Children tended to mention people who had told them about a website more often than they mentioned the method by which it was found. Use of Google was, however, mentioned by around half of them, but no specific information was volunteered about how their searches were conducted. This is undoubtedly partly due to a limitation of the survey and focus group methods used in this study. It may of course be the case that because children already know the names or web addresses of the sites to go to (due to recommendations from friends or family) that not much actual searching activity is being undertaken, though as we saw earlier, children are not always particularly skilled in remembering or relating which information sources they have used for an information task.

Children often look to specific children as experts when seeking information for leisure purposes.

Children often go beyond merely using other people as information sources, instead regarding individuals as *experts* on certain topics. In this study an aspect of the findings that was particularly interesting was the frequency with which children described each other as information sources in a way that went beyond the casual. They were not asked specifically about this, nonetheless, it emerged very strongly that they had peers who were known as the go-to knowledgeable persons, oracles perhaps, on particular topics. Not all of these topics were entertainment related; as well as “the Star Wars genius” and “the cricket genius” there was a “Microsoft genius”. This child’s knowledge enabled his peers more efficient access to their preferred leisure or school activities. Only boys described this phenomenon, and all of the children described in such (often very detailed) terms, were also boys. This phenomenon did not emerge in relation to

school information tasks but future research might examine whether it exists there also.

In the next section I consider the fifth question investigated for this study:

RQ5 What influence, if any, does gender have on children's information seeking behaviour in respect of each of the elements mentioned RQ1-RQ4?

This section reports on the findings in relation to gender in child information seeking. Elements of this were already discussed in relation to **RQ1-RQ4** above. A more focused discussion will proceed here. Findings regarding how gender differences manifest in formal, teacher-generated information tasks will be discussed as well as those related to out-of-school information seeking. Gender and age intersect to become particularly influential on the information behaviour of children at the upper end of the concrete operational stage and much of the discussion in this section will refer to children in the upper age group studied.

Differences in maturity mean that differences in information behaviour between boys and girls are more pronounced at the end of the concrete operational stage than at earlier ages.

At 11-12 years girls tend to be more mature than boys and this impacts on their skills, attitudes and interests in ways that may influence their information behaviour. At this point, the end of the concrete operational stage, children are beginning to leave their childhood behind (Piaget and Inhelder, 1969) and for children in this study it was evident that more girls than boys fitted this description. One immediate indicator of this difference in maturity was in the attitudes that girls and boys had to making the transition to secondary school: boys were far more concerned about going than girls were, referencing the difficulty and level of work they would encounter there in particular. Girls in

this study also appeared to be leaving their childhood reading behind earlier than boys, aligning with the findings of (Eggen and Kauchak, 2001), for example. Boys favoured books aimed at a far lower reading age than those favoured by girls of the same age. It is unclear whether these were books that boys had only just begun to enjoy or whether these were the last books they had enjoyed. It was clear, however that girls were describing books recently read and enjoyed.

There are some key differences between the leisure information seeking behaviours of boys and girls.

Boys and girls exhibit different behaviours in their leisure information seeking. This may well be linked to differences in the leisure interests that boys and girls tend to have but it is difficult to be certain that this is the only or even the main reason for the differences in their information behaviour. The study undertaken here revealed that boys are more flexible about web searching for their leisure interests than girls are, in terms of the choice of search engine or service used. Boys also tend to use a wider range of information sources to access information about their leisure interests than girls do. In addition, boys report using television as a source of information about their hobbies and interests far more than girls do. I am cautious about making claims regarding the reasons for these differences: they do not seem obviously linked to the maturity differences discussed early in this chapter, for example. With boys reporting a much narrower range of leisure interests than girls, it also seems non-intuitive that they would also be more flexible about their web searching and use of information sources than girls tend to be. Why would this be? A more scattergun approach to information seeking, influences that girls tend not to have, or due to the nature of those interests? Without further enquiry it is difficult to say. With regard to boys' more frequent use of television as an information source for leisure interests, it is worth noting that television was mentioned mostly but not exclusively, in relation to information about sport interests. Boys' more frequent use of television for information could be due to

a greater instance of sport among boys' interests but it is unclear whether that is the only reason for this difference.

Where print information is concerned, boys and girls exhibit very distinct information behaviour to each other. We saw earlier in this section some of the influence of maturity on reading levels. Further differences were evident such as girls tending to be keen fiction and non-fiction readers who had moved on to reading in the young adult (YA) category, while boys tended not to have made such a transition, and reported reading fiction only rarely. Boys were, however, obtaining information from adult non-fiction books, such as sport biographies. Girls found the books available in school unsuited to their more sophisticated and voracious tastes: public libraries were often filling the gap, while boys were less exercised about a need for increased or wider access to books for leisure purposes. Several boys in this study expressed extreme ambivalence for reading for pleasure, however, some boys, even those least enthusiastic about reading, did mention that they enjoyed accessing the content of books that held interest for them via other means such as text-to-speech technology.

There are significant differences between boys and girls regarding their technology use and how they are supported in this at home. While boys and girls report accessing digital information outside of school to a similar degree to each other, and experience similar levels of support, there are differences in how this access and support occurs. For example, boys and girls differ from each other with regard to their use of social media both in terms of frequency of use and preferred platforms. In addition, boys tend to name friends as those with whom they do their out-of-school information seeking while girls tend to name family members. Boys also rely on peers more for fulfilling their information needs than girls do. The phenomenon of the information "genius" discussed earlier in this chapter surfaced multiple times among boys but was not observed among girls. Again, some of these differences might be explained by differences in maturity and leisure interests, but the differences in the support experienced by boys and girls in their home information seeking may also

explain some of the differences in sites used and known about and also the difference in preferences for different information channels between girls and boys.

The parameters of formal information tasks are less adhered to by boys than by girls.

There are a number of ways in which boys demonstrate that they approach formal information tasks rather differently than girls tend to. A major difference is in how they are affected by a lack of free choice in search topics. As we saw earlier in this chapter, in the **Poster Task** in particular, many children had all but given up on a task being a success before it began if they had not been assigned a sub-topic perceived as favourable or “cool”. Children tended to rate their performance lower if they had not been assigned a favoured sub-topic, regardless of their actual performance in the task. Boys were particularly affected by this, girls somewhat less so. Younger children, while affected by this phenomenon, were affected to a lesser degree, with girls in the younger age group again being less affected than boys. Boys also appear to take a more flexible approach to completing information tasks composed of many subtasks. For example, in this study, across many tasks, it was found that girls are stricter at adhering to task order than boys are. It is possible that this may have an effect on the quality of work produced, on the time taken to carry out individual parts of a task and on the task overall but it is difficult to quantify this exactly. Data for younger children regarding task order was less available and therefore less conclusive. Boys are experiencing difficulties working within task parameters in information tasks in other ways. In both age groups studied here, boys had a tendency to copy retrieved information verbatim to a rather greater degree greater than girls did, regardless of the information channel from which the information originated. Boys described their difficulties with putting information into their own words more often than girls did, which may point to at least part of the reason why this occurred. That boys also seem to be less mature in their reading habits may also be relevant.

With regard to the roles taken or assigned in formal information seeking tasks, boys are often not adhering in ways that teachers might expect them to. Boys in this age group, when seeking information in groups, often take an altruistic role, helping other children, girls in particular, to find information, while neglecting their own information tasks or assigned roles. Performing an altruistic role gives them pleasure and thus adds to their sense of success, even if their own assigned information seeking has been compromised as a result, either in quality or quantity. This phenomenon was particularly evident among younger children in this study. Younger boys, even those whose task performance was relatively weak when compared to that of others in the class, rated their success in and enjoyment of the task highly and cited the altruism as a factor in their enjoyment.

There are also differences in how the knowledge and attitudes of boys and girls evolve as a topic proceeds. In this study, among the **P7s**, it was found, via the KWL grid that even where boys and girls had expressed similar levels of interest and enthusiasm in the WW2 topic at its outset, by the end they diverged in a number of ways. Despite taking part in the same activities as boys, girls tended to indicate having acquired more knowledge than boys had and also more satisfaction with that acquired knowledge. Additionally, boys' comments in focus groups indicated that they had been more disappointed with the topic than girls had, despite the equal levels of knowledge and interest and similar priorities in the beginning.

Boys rate their success in classroom information tasks more highly than girls rate themselves, independent of performance. This is true at both ends of the concrete operational stage.

When boys and girls are asked to self-rate their performance in classroom-based information tasks, boys tend to rate themselves higher than girls, independent of their relative or absolute performance in the task. In this study,

this difference in self-rating was found for both age groups in both group and individual tasks, including in those tasks where there were individual and group elements. The same finding applied in those cases where girls had significantly outperformed boys with regard to adhering to the task criteria. This finding was consistent across all tasks, and in data collected via all of the evaluation tools that involved self-report by the children, i.e. those created by the researcher as well as those created by the teacher. Such overconfidence in achievement or ability has been found in many other studies including several in education e.g. (Fortin et al., 2015). Many of these have been in relation to mathematical abilities. This study provides evidence of the phenomenon in relation to information seeking in the classroom.

Even if boys and girls have similar initial knowledge and experience of a topic at the outset, the journey of girls through a topic may be rather different to that of boys.

The evolution of children's knowledge and attitudes to topics appears to be influenced by gender and this impacts on their information seeking behaviour and indeed vice versa. The older children in this study began with similar levels of knowledge of and interest in the WW2 topic, largely undifferentiated by gender. However, by the end of the topic, girls reported being much more satisfied with what they had learned than boys did. This has implications for task design and topic choice and is, I believe, also strongly related to issues discussed earlier in this chapter in relation to children's topic expectations not being met, with boys being more affected than girls by this.

Summary and Implications

The findings indicate that there is a strong disconnect between adult and child perceptions of information seeking and that there are gaps in support for child information seeking due to this and due to assumptions about ability and access. Researchers such as Moore indicated long ago that teachers and other

educators often design information tasks that do not particularly support better information literacy for children (Moore, 1995) and in this study, one would have to conclude that there were a number of tasks that fitted this description, which might lead one to believe that elsewhere within the curriculum opportunities are being missed. While researchers such as Agosto have cautioned the use of gender when analysing child information behaviour (Agosto, 2004), the results of this study showed differences between boys and girls at both ends of the concrete operational stage that suggest that it should not be ignored. Here, based on the findings, I make a few recommendations for ways in which children could be better supported in their in-school information seeking.

- Better typing and spelling support is required within search systems used by children for the reasons above, though I note that attempts to provide such support have often failed to improve children's search performance. Recent developments in voice activated searching such as that by (Yarosh et al., 2018) have shown some promise in a move away from text based searching but text is likely to remain the main mode of interaction for some time and in many situations, particularly in a noisy classroom.
- Search environments that take better account of children's conceptions of success in information seeking when assisting them in making relevance judgments would be highly beneficial for classroom information tasks.
- Teachers can support better child information seeking by being clear and explicit in task instructions, avoiding redundancy in task design, and by discussing issues such as the purpose and destination of the found information before the task commences. In addition, given the reliance on tasksheet vocabulary that children make when forming queries, educators should design these with extreme care to avoid additional difficulty. See also (Vanderschantz et al., 2014).

- Teachers can better support effective information seeking in the classroom via the use of structured templates in which information found is to be recorded. At the moment, much of children's time is lost on producing the physical structure of the answer rather than focusing on the finding and evaluation of the information.
- Classroom information tasks, even when undertaken by the oldest most able primary school pupils require the support of adults from start to end particularly with regard to typing, vocabulary and technological issues and, also, issues of focus and distraction. School curricula should therefore contain recommendations for adequate staffing support for such activities.
- Teachers should encourage collaboration between classmates to support children in their information seeking as younger children in particular, enjoy it very much indeed and tend to regard information seeking as a pleasurable activity as a result.
- Schools should strive for more inclusive information seeking activities for children that pay heed to their needs, desires and priorities within a topic. Too often, these are ignored or minimised with a resulting lack of engagement with the topic and activities.
- Schools can support information seeking by allowing children to take books home and by being mindful that not all children have access to resources or parental/familial support for information tasks. Some children might be disadvantaged where tasks with a local focus are concerned, particularly if their parents are new to the country or area.
- Local authorities should give careful consideration to the filtering used in schools. The tasks undertaken in this study could have been better supported via the use of additional, widely available multimedia resources but all too often such resources cannot be used due to the firewalls in place.

A Reflection on the Methodological Approach Taken

In this section of the discussion I reflect on the methodological approach taken for the investigation: the use of real, teacher-created imposed tasks in place of the researcher-created imposed tasks employed in the majority of published studies of child information seeking. I discuss also the effectiveness of the ethnographic approach undertaken and the effectiveness of each of the research tools employed with regard to answering the research questions. In particular, I make the case for using the focus group plus artefact method for evaluating child information seeking by discussing the benefits of such an approach, when contrasted with the opportunities offered by other methods and approaches. The chapter concludes with a discussion of the limitations of the study.

Investigating real tasks in a school setting is a powerful way in which to evaluate children's classroom-based information seeking behaviour.

It is worth reflecting, in the light of the data I was able to gather and the findings in relation to these, whether using real tasks to conduct my study was a worthwhile approach that conferred benefits that would have been absent had a more experimental approach using simulated tasks been employed. At the outset of my PhD research, I believed that the investigation of such un-simulated tasks would be a powerful approach for studying child information seeking behaviour and one that would offer realism due to the involvement of the actual resources e.g. task instruction sheets and information sources employed in the real environment in which children's information tasks would normally be carried out. I believe the approach taken was successful and that the descriptions in the findings chapters go some way to reflecting the realities of everyday classroom information seeking with all the complexity and indeed messiness that implies.

Investigating real tasks involves the real media e.g. exercise books, where information is to be recorded or used, and this in itself can lead to a richer study than one that relies on researcher-designed tasks. Much of my early thinking

regarding resources had been focused on the textual or other materials that children would have to access to and would explore and assemble in order to find answers to their questions and, while I had given some thought to how that information would be used, I had given less consideration to the required format for those answers and still less to the effect that this format would have on the resultant information behaviour. On undertaking the study, it became plain that very often the required final format of the information (usually denoted by the task instructions and often in combination with the teachers' verbal instructions or hints), in combination with the material, structure and dimensions of the space where the found information was destined to be recorded or hosted, had a very noticeable effect on the manner in which tasks were performed. For example, an emphasis on neatness emerged in several tasks e.g. **ARP1** and **ARP4** where the task instructions were particularly specific regarding how the information was to be recorded or presented. These structures (or perhaps they might be thought of as *strictures*) appeared to have an effect on the amount of actual information seeking activity occurring, meaning that what information behaviour researchers might regard as being the de facto information aspects of the task were rather limited while more aesthetic considerations were prioritised. I believe that it was only by investigating these real tasks that I discovered this effect and could therefore consider its wider importance, particularly with regard to how children and teachers view success in information seeking tasks.

Investigating real tasks that were embedded in educational topics also allowed for a degree of comparison to be made between the cohorts of children who took part in the study and also with previous cohorts of children performing the same tasks and topics in previous years, and for comparisons to be made with the performance and engagement of children from these cohorts performing other topics earlier in the school year. This made for some interesting discussions in the teacher interviews, for example, and with the children themselves, particularly in focus group situations. Such discussions would not

have been quite so feasible had my research employed the use of experimental task sets that I had generated myself for the investigation.

Investigating real tasks when evaluating children's classroom information seeking provides opportunities for accessing effective evaluation and feedback tools that would otherwise be unavailable.

Investigating real tasks had an unexpected and very useful consequence related to the teacher-created or teacher-supplied materials that accompanied the tasks. In particular, having access to the feedback tools that accompanied the tasks and topic meant that I could use these to collect data about children's experiences of the tasks without having to devise additional data collection tools. This was advantageous as the feedback tools were, in general, familiar to the children and indeed their teachers, which meant, arguably, that the participant learning required to employ them was less than would have been the case for tools that I devised myself. In addition, teacher familiarity with these tools and with the nature of typical responses to them, allowed me to have an additional means of exploring, albeit to a limited degree, how the investigated tasks and children's experiences of them compared with previous tasks they had undertaken, or how these contrasted with previous cohorts' experiences of the same tasks and topics. Many of the key findings of the study originate from data collected via such tools, either in isolation or in combination with data from the other research tools I devised myself. Using real tasks also meant that in the teacher interviews I could gain the teacher perspective on the information-seeking that had occurred, with both teacher and researcher being fully acquainted with the structure of the tasks and the task outcomes e.g. it was usually the case that the teacher had assessed the written work produced in relation to each task before we discussed it, in a way that would not have been the case had I designed the tasks and data collection tools myself. I would argue also that there simply would not have been the same investment in the study from the teachers had they not had this central role in task design and assessment. Additionally, using real tasks was an effective way of gaining the

perspective of both task setter and task performer that was less biased by the objectives of the study than might have been the case had I used tasks of my own making.

Investigating real tasks can enable a holistic ethnographic approach to an investigation of child information seeking in the classroom to be undertaken.

Investigating real tasks, particularly tasks that were to be completed within a much wider range of topic-specific activities, allowed me to take a more holistic approach to investigating child information-seeking behaviour. The tasks could be studied within the context of the topic for which they had been designed and within the curriculum framework that had guided their design. In addition, using these tasks encouraged, if not forced me, to take an ethnographic approach to the evaluation, which meant that I gained knowledge of the information context in which the children were operating in a way that I would have been less likely to do quite so thoroughly had I used my own tasks. I would argue that my resultant deeper exploration and understanding of this information context added weight to my interpretation of the findings in a way that a more experimental approach to this investigation may have lacked.

Investigating real tasks in this holistic way was advantageous in that it revealed aspects of information behaviour and the influences on it at all stages of task performance e.g. confusions arising from the manner in which tasks were described or in the ways in which task instructions were given well before the information seeking had begun. For example, in the **Clydebank Blitz** homework task, the instructions were not always Clydebank-specific, though, clearly from her responses in interview and in her marking of the reports, the **P7** teacher had intended them to be.

Conducting an investigation using real tasks such as these revealed something that was, to my mind, surprising but is probably fairly common in pedagogical

situations: information tasks are often poorly designed. The **P7** teacher in particular had designed some tasks and had formulated and presented instructions for these in a way that made them difficult to complete or meant that time on these tasks was often used very inefficiently. For example, in the **Poster Task**, children were encouraged to look online for text and images, but due to there being no print facilities, looking for photos in this way was largely futile with regard to completing the poster, unless those images found were to be copied by hand. Many children spent a long time looking for images and deciding, in some cases agonising over, which to choose, but ultimately none of these images found their way on to the posters. Often no material resulting from these searches was used at all, arguably due to the distraction of looking for information of a type that could not be used, rather than a focus on finding or using potentially useful text, for example. Meanwhile, other children looked in books or in the pre-printed sheets provided for images to use. In addition, also in the **Poster Task**, the teacher had provided pre-printed information sheets that were drawn from the Internet, which many children did indeed use, but this meant that some of the children's efforts in the task were not as efficient as they might have been. Often children searching online were unwittingly duplicating the efforts of children elsewhere in their group by making verbatim notes from the same sources that they already had available to them in printed form. Notably, the **P7** teacher said in interview that she thought some children had benefited from or enjoyed tasks of this nature purely due to the chance to use a computer and that the process was as important as the end result, therefore it is possible that flaws in task design such as those described here were of less concern to her than one might imagine. Perhaps "flaw" then is a misnomer. Again, only by investigating real tasks was I able to gain these types of insights regarding perceptions of task success in children's information seeking behaviour.

Investigating real tasks in a study of child information seeking in the classroom can reveal the role that others take in children's information seeking.

Investigating real tasks revealed the central role that teachers and other adults often play in the information-seeking processes of children, both as information sources and in their support of children's information seeking in other ways e.g. clarification of task instructions, providing definitions of unfamiliar words, assisting with website navigation or providing technical support, all of which were observed on multiple occasions during the study. I think it is unlikely that the adults in the classroom would have been involved in the information-seeking process of these children in the same way had I used my own tasks: key insights regarding children's use of other people as an information source and of their need for support in information seeking may have been lost had I done so.

Investigating real tasks in a study of child information seeking can reveal group dynamics of everyday information seeking in the classroom.

By investigating real tasks, I believe that I was able to capture the group dynamics of children's everyday school information experiences in a way that would have been neglected or difficult to design for had I been using my own tasks. In many of the studies of child information-seeking that employ researcher-designed tasks, children perform their information seeking individually or in pairs and only rarely in large groups or teams. Much learning, particularly in primary school is heavily group-oriented, as is reflected in the curricula of many, (though certainly not all) countries, Scotland being no exception. An example of the group dynamics referred to is the behaviour seen in several groups in **P5** where boys in particular would help other children to find information while neglecting their own completion of the task. Also, typical researcher-designed information-seeking tasks as described in the literature tend to have a much less rich eventual outcome than those investigated here e.g.

it is less usual to encounter a detailed description of an evaluation of an information task in the literature that is as complex as the **Poster** and **Astro7** tasks and that reflects the type of multi-source, multimedia information seeking (and use) that children are expected to be able to do at this stage of development.

Investigating real tasks allows for deeper exploration of issues in child information seeking behaviour.

In **Chapter 2's Literature Review** we saw that a great deal is known from experimental studies about children's abilities and preferences regarding features of search such as query length, browsing style, and query reformulation and, while the design of this study did not allow me to gather particularly focused data on those elements of information seeking, I did gain many insights about the behaviour of children in this regard by using real tasks as I believe is evidenced by the findings discussed earlier in this chapter. The real power of the approach, lay in the capacity of these real tasks for allowing me to explore deeper issues related to task success and influence of context or situation.

Regarding that desire to explore the influence of context or situation, it would have been a serious challenge for me to successfully develop and deploy an out-of-school task such as the **Clydebank Blitz** homework task to gain the sorts of insights that emerged from the evaluation of the real task as devised by the teacher. From the point of view of completion rate alone, to have any hope of such a task being completed to the degree that it was for this teacher-set and therefore mandatory task would have required extraordinary effort and exceptional study design and perhaps significant negotiation with parents and children. In this sense, the availability of a real task was invaluable. Setting the task to children within one class grouping and having it deployed and assessed by the same teacher, provided controls that I would have struggled to replicate

outside of this setting, so it was the real task and the real setting working in tandem that allowed this part of the investigation to proceed successfully.

Investigating real tasks in a classroom-based study of children's information seeking poses challenges related to school scheduling and resource availability.

There were of course some features of real tasks that made a study employing them a challenge to design and carry out. I will discuss the overall limitations of the study in full later in this chapter, however I will comment here on those that particularly pertain to the investigation of real tasks. While I knew in advance, via teachers and also via the resources with which they provided me, a good deal about how tasks would be presented to the children via the task sheets, the materials that would be available to them for completing the task, the timings allowed and the group formations that would be in place, there were elements that were less predictable. I did not always know the precise dates and times when these tasks would be undertaken as lessons could be substituted almost at the last minute, which was very challenging from a researcher availability and data collection point of view. Even when tasks did happen in accordance with the schedule I had been given, the online connectivity or functionality of laptops sometimes intervened to mean that certain tasks were not feasible.

Additionally, the absence of certain children on the days of the tasks meant that some groups were less well populated when carrying out the tasks. Arguably this could also have been the case with researcher-designed tasks in an experimental setting, a situation where getting participants (and their carers) to turn up when invited is often a challenge but I think it is worth acknowledging the impact that this need for flexibility on behalf of the researcher may have had on the scope and quality of data that could be collected.

In summary, I believe that my investigation of real information tasks in the classroom and in an out-of-school situation (in the case of the **Clydebank Blitz** task) led to richer data collection to satisfy the needs of the research questions

than would have been possible via the use of an experimental approach, particularly with regard to exploring the home context of information seeking for school purposes.

Comment on Use of Ethnography and Observation

I believe that I have already made a good case in Chapter 3 Methodology for the suitability of ethnography as an approach for conducting a study of this scope and nature, however there are a few additional observations that I would like to make about my use of the approach now that the study has been completed that I believe further demonstrate its suitability for answering the research questions.

Taking an ethnographic approach to investigating children's information seeking may provide unexpected opportunities to explore tasks that at first may not seem promising for investigation.

At the outset of the study, when I first had access to the class curricula and to the detail of the tasks that were to be undertaken by **P7**, I might have chosen at that point to select a few tasks for particular focus and to visit the school only on those days when these tasks were due to be taking place. Had I done this, I think it is likely that I would have chosen to focus on **ARP1**, **ARP4** and **Rationing6** only, based on the descriptions that I had been given of these tasks. It is likely that I would then have tried to find suitable similar tasks scheduled with children in younger age groups at a later date in order to make a comparison, presuming these existed, which I now know to be less than a certainty. In practice, the data gathered from these three tasks was much less rich than that gathered from other tasks such as the **Poster Task** (and its analogue the **Astro7** task), and so concentrating on those three tasks alone would have been likely to have led to a much weaker study, or certainly one very different in character due to differences in the level of richness in the data that emerged. It was only due to my decision to embed myself within the **P7** class at the start of the topic

and for all subsequent Topic Work sessions, not just those where particular tasks were happening, that I had the opportunity to experience and observe the **Poster Task**. This was the catalyst for much of the design and direction of the study. For example, the **Poster Task** led me to explore the use of artefacts as an evaluation method, motivated both by the richness of the posters created and by the fact that I had not been able to observe every group at task, as their work on the task had been done in parallel with and at the same time as other groups. I realised that this would be the case for many of the tasks, but, that it might be possible, via the work that they had produced, to re-visit that task with more than just the one group whose activities I had been able to observe in full. The **Poster Task** also influenced my choice to study the somewhat analogous **Astro7** task with **P5**, and inspired my use of the traffic light evaluation and other teacher-created evaluation tools throughout the study. An early observation of **P7** children completing a task wherein they were asked to research (the word used by the teacher) key wartime concepts such as “Conscription” and “RAF”, revealed that not only had children interpreted “research” as being chiefly about finding a definition of the given word, but also that many children were using the “define” feature of Google to achieve this. This dynamic, it seemed, had emerged from one child having learned the technique from a parent. The child had then taught much of the rest of the class how to perform the task in this way. This latter observation influenced the study in a way previously described in Chapter 3 Methodology: my interest in the influence from home and differences in information seeking there as opposed to at school was therefore enhanced.

I could not know it until all of the tasks (and in some cases the full evaluation of each) had been completed, but the **Poster Task**, **Astro7**, and **Clydebank Blitz** homework tasks, all provided a great deal of detailed data that informed answers to all of the research questions to some degree. Tasks **ARP1**, **ARP4** and **Rationing6** were, on the other hand, relatively less satisfying to evaluate due to their having generated a much smaller amount of data individually than the other tasks had, despite having seemed at the outset of the study to be the most

obvious tasks to focus on. Studying those tasks alone, perhaps in tandem with an out-of-school task such as the **Clydebank Blitz** homework task would not, I think, have generated sufficient data to answer the questions in a satisfactory way. I believe that this observation makes the case further for the ethnographic approach taken.

An observational approach to studying child information seeking may be key to understanding the behaviour due to the unreliability of self-reporting, particularly among younger children.

The key feature of ethnographic research is observation. In my study, observing classes over an extended period was critical for confirming or, in some cases, contradicting, children's self-reported use of information sources in particular. There were multiple instances in both age groups studied where, in post-task questionnaires or focus group questioning, children reported using certain media during tasks where they had been observed not to use or to even look at such sources during the task in question. Observations also allowed me access to an element of what children were finding difficult or interesting in relation to searching or selecting information, in a way that post-task tools such as the questionnaires and focus groups I employed were unable to satisfactorily provide. During observation I could see those parts of the task that took longest or that were given most attention, in a manner that I believe post-task questioning did not achieve. Humans, children in particular, tend to be poor at reporting the amount of time spent on particular activities and the self-reporting on timings in this study was typically weak. In addition, discovering the lack of enjoyment that children experienced in relation to many school information tasks was mainly possible because I had used and observed real tasks, and a variety of them. Only by conducting observations did I notice that, while children were often keen to play games on the websites they had been directed to (and indeed they reported their enjoyment of doing this in focus groups) they tended to give up on these games very quickly, even if they reported via other means that they had enjoyed the games. This led to insights

about better design of children's educational resources and services discussed earlier in this chapter and in the Conclusion.

In an ethnographic study of children's information seeking in the classroom, incidental observations often provide the most insight.

The observations discussed in this section have thus far related to those made during the tasks focused on in the thesis and I am certain that such observational activity contributed hugely to my ability to answer my research questions. I would argue however, that many of my most interesting insights arose from the incidental, one might say *background*, observations that I made outwith the focused observations that were made of the main tasks. For example, in one of the shorter tasks undertaken by **P7**, children were observed not to look for any information at all despite instructions to do so, using instead information drawn from their own knowledge. I am not confident that children would have self-reported this behaviour accurately given my experience of evaluating other tasks with this group.

For information seeking tasks where children are performing the same task on different days from peers, research attention bias may creep in.

A final observation about the use of ethnography for this study relates to the influence of researcher experience and the specifics of the settings where observations were undertaken. By the time that the final **P5** group came to complete **Astro7**, I had become much more familiar with this particular task than I had been at the outset with the first group who completed it, and I was therefore, arguably, more skilled at observing and using the pre and post-task questionnaires in relation to it. Therefore, data collection with those groups who were among the last to perform the task was noticeably richer in detail than for those groups who carried out the task earlier in the study. Observations of **P5** were generally more successful in terms of the richness of the data collected than were those conducted with **P7**, as the **P5** groups were smaller (2-

4 vs. 4-6 children), meaning that it was easier to get a sense of what each group member was doing where the younger groups of children were concerned. The physical configuration of the location where each task was set also had an influence on how it was performed, and, arguably, on how it was observed, with **Astro7** being contained within a corner of the classroom and therefore easier to observe in a more holistic way, unlike the **Poster Task** where much of the searching in some groups took place far away from the other activities of the group, which meant that research attention was more at risk of fragmentation.

Observation of tasks that are not explicitly oriented around information seeking can reveal insights about children's information-seeking behaviour.

Being in class at times when children were engaged in topic activities that were not those planned for specific evaluation, revealed additional contextual information pertinent to my understanding of why children behaved as they did during the tasks e.g. while watching the film *Goodnight Mr Tom* I could see how riveted **P7** were by it and how excited they were by the chance to watch more. I have already mentioned earlier in the chapter that when completing the **Clydebank Blitz** homework task, many of the children knew what the aftermath of bombing might look like after seeing bombing portrayed in the film and could therefore describe it in their reports or use it to inform their searches. Others had been influenced by the film, to the extent that in the evacuation task, children often chose to pack similar items to those packed by a character from the film, even if it made little sense to do so.

Beyond the tasks that were focused on for the main study there were a number of non-task oriented observations conducted: one during a library visit and one during a museum visit. The library visit was useful for establishing the resources available locally, gauging children's familiarity with the library and how to use it, understanding more about their personal reading preferences, establishing that there were some differences between the book choices of boys

and girls, and for understanding more about the teacher's needs and desires with regard to resources for the WW2 topic and her frustration at the lack of availability of these. The museum visit revealed the difficulties or lack of interest or priority that most of the **P7** children present had on focusing on the task they had been assigned. The museum visit also revealed their keenness to explore exhibits that were multimedia-oriented in particular, regardless of topic or context, in preference to the texts and non-interactive displays available in the museum.

With regard to the culture of the classes, being present for prolonged periods in **P7** and **P5** and for those non-information tasks allowed me to see how comfortable children were about asking questions of the teacher or other adults present about things that they did not understand e.g. help with unfamiliar words such as "precautions" (**P7**) and "Celsius" (**P5**). Children in both classes seemed very comfortable about asking for help, in fact, and the study should very much be viewed in that context. It is likely that other classes in other schools might have had a different dynamic and that this openness about question asking might not have been there.

Remaining in the participant observer role is more challenging to achieve when observing the information seeking behaviour of younger children.

A final comment about my role within the observations: I believe that staying in my participant observer role and not succumbing to becoming an information source was far more challenging to achieve when I was observing the younger children than was the case when I was with children from the **P7** class. The **P5s** tended to ask me for help with tasks far more than the **P7** children had done during any of their tasks. This was very difficult to manage because of the desire not to affect or interfere with the tasks. I limited myself to helping with technical issues or when children were in genuine distress and the teacher was not around to intervene. In my initial sessions with each class, before I had begun the more focussed observation of tasks, children in both age groups were

tending to call me 'Miss' but this largely stopped within the first few weeks. Regarding whether children saw me differently from how they would a teacher or other adult in a position of responsibility, it was clear in the focus groups in particular that **P7** would tell me things that they would not tell the teacher, particularly about what they did or did not know about a topic. They would also tell me how much effort they had put into certain tasks or aspects of tasks and how much reading they actually did of the books they took home from school in a way that they said they would not share with school staff. I gained the impression however that the **P5s** were rather less candid in interview situations such as the focus groups and were keener to please in the answers they gave than the older children were, in line with the observations of many other researchers working with children. The **P5s** were asking me for help more frequently than the older children were, which could be seen as a weakness of my approach but it did of course show that they were comfortable with me and this allowed me to see better the level and type of support they needed.

Method Effectiveness

In the following sections, I discuss each of the data collection methods employed and their effectiveness in the investigation, and in particular, the particular the findings to which each method contributed. I discuss those methods that I had explicitly included in my methodology and others such as group presentations that emerged as the study progressed.

Use of Pre and Post-task Questionnaires may be of only limited use when evaluating child information seeking behaviour, particularly where tasks are conducted in groups.

These short questionnaires were intended to capture children's immediate thoughts on starting (once a task sheet had been seen) and completing a task. They were relatively quick to administer though there was one occasion where a late start meant I could not use the pre-questionnaire, and placed limits on the

time available for completion of the post-task questionnaire. On another occasion, a topic session for **P5** happened at an unscheduled time meaning that questionnaires could not be used. It was fortunate therefore that I had other means of evaluation at my disposal such as the artefacts, focus groups and traffic light feedback forms. In general, despite piloting and use of similar questionnaires with slightly older children in a previous study (Project WEBKIT) I found the questionnaires less useful than I had anticipated. When the results were grouped for each task it was difficult to discern much of a pattern in children's feedback with few differences emerging between groups or between tasks. There were few instances of tasks being particularly liked or disliked or found to be particularly easy or difficult: most answers tended towards the middle. It was difficult also to represent individual experiences accurately using this tool due to it being difficult to capture answers from everyone in the group in the short time available for data collection immediately preceding and following the task. Exploring gender differences via this means was therefore rather unsatisfactory and often inconclusive, for example. The questionnaire was perhaps even less successful with the younger children who tended to give fairly neutral answers to many of the questions, even post-task. In a future study of this type I would consider using this technique again, but only with adaptations such as fewer questions and a better structure for the researcher to record answers from individual children, perhaps also using pictorial techniques to aid children in expressing their answers as per (Mohd Yusoff et al., 2013) and (Hanna et al., 1997).

Key finding from use of tool: The questionnaire question that elicited the most interesting answers from my point of view was "How much information do you have already to help you to do this task"? In many cases, for the tasks where this method was employed, children thought that they had a medium amount or quite a lot of information at the outset of a task, but this was rarely matched by particularly successful performance in the task.

Use of survey methods can be an effective way of capturing data about children's leisure and home information seeking behaviour, particularly when used with older children.

The survey was an effective way of gathering data quickly about leisure information seeking preferences and much of its value lay in finding out more about the motivations and interests, habits, preferences and personalities of the older children involved in the study. Having children complete the survey prepared the way for the leisure task focus groups, in which further probing could be undertaken about their experiences outside of school with regard to information seeking for leisure purposes. I have considered whether it might also have been interesting to use such a survey with the **P5** class but think that using it with **P7** was sufficient for exploring the issues that required investigation in order to answer **RQ4** on the effect of context and situation on information seeking. It would of course be interesting to explore how such elements vary with age but it is clear to me that the method of delivery would have to be rather different due to literacy and other issues that come to the fore when deploying such research tools with younger children. I was vigilant when analysing **P7**'s responses to the survey by considering which children were sitting close to each other while completing it. I did notice a degree of influence between some neighbours in their choices of favourite leisure activities, particularly where more unusual or less frequent choices were involved, but on the whole, children completed the survey individually and independently. The survey was quick and low effort to deploy though the data analysis was more time consuming than had been anticipated.

Key finding from use of tool: A key finding from this method that had not yet been explicitly uncovered was the difference in maturity level between boys and girls. One of the places where this was most obvious was in children's attitudes to reading materials. In the survey, girls named books that tended to be in the young adult genre whereas boys named books that were for much younger children. Boys tended to indicate that they preferred non-fiction to the fiction

more commonly mentioned by girls. The differences between genders regarding computer use and support at home were revealed here for the first time also; with boys tending to name friends and girls naming family as the people they got information from or did their out-of-school information seeking with. The differences in social media use between the sexes were also revealed in a way by the survey that was not so easily quantified via other methods.

Teacher interviews can be useful for understanding the disconnect between child and adult expectations of an information task and group performance of a task but may be less effective for evaluating individual performance.

These interviews were useful for finding out which tasks teachers thought had gone well, which groups had performed best and why, for uncovering context as to how the tasks were set and for uncovering the implicit expectations of the teachers. The teachers were also able to reflect on their class's information behaviour in particular tasks, by making comparisons with previous tasks the class had completed; by making comparisons with previous topics the class had encountered and by considering the particular abilities, preferences and personalities that existed in the classes and how this contrasted with earlier cohorts. The comments that the P7 teacher made about how she would set the tasks differently in future were also useful in uncovering elements that she may have thought were limitations in the task design regarding how tasks were presented to the children. Often this was about timing i.e. where in the topic they were and what exposure the class had already had to particular information. One limitation of the teacher interviews was, in the absence of prompts, the teacher's relatively weak ability to easily describe individual child performance in this setting. The interviews were more useful for uncovering the teachers' thoughts about motivation and overall impressions and their reflections about task performance at group and class level. Future interviews with teachers (both group and individual) might employ better use of the

artefacts of the information seeking in a similar way to how they were used with children.

Key finding from use of tool: Data collected from the teacher interviews revealed the gap in perceptions between the **P7** teacher's view and the children's view of how well the class and the groups within it had performed many of the tasks. This was particularly the case with the **Poster Task** in particular where the impressions were very much at odds with each other. Additionally, the method uncovered the **P7** teacher's view that the journey of each task was almost as important as the destination.

Examination of teachers' written assessment comments can be useful for understanding teachers' priorities in information tasks, and how they reveal their expectations to children.

Teachers made many (but often rather brief) comments directly on the children's written work, mostly in the children's jotters, or, in the case of the **P5s**, on their traffic light evaluation sheets. It was only via inspection of these comments that I could see in detail teachers' priorities when making assessments, and also how teachers communicated with children at an individual level.

Key finding from use of tool: Feedback via this method tended to be fairly general in nature, but there were some specific remarks made that the **P7** teacher made that revealed, for example, task requirements that had not been outlined on a task sheet or via any other instructions such as the comments made about referencing in the **Clydebank Blitz** homework task: no specific instruction was given regarding referencing but the teacher remarked when it had been omitted. The **P5** teacher's written comments revealed, for example, the focus that she had placed on children adding a large volume of information to their fact files beyond that provided on the fact sheets she had provided.

Artefact analysis can be an effective technique for evaluating task completion and task adherence in children's information seeking.

Artefact analysis was an effective way of seeing how well children had adhered to task requirements in terms of content and also how well they had adhered to guidelines. This method was also useful for discovering the extent to which children had worked as individuals. This was particularly useful in the **Astro7** task where it was clear when individuals had been working together or, at least, had been influencing each other due to the overlaps in style (and sometimes content) of their fact files. This method was particularly useful for investigating the completion rate necessary for the analysis in a way that other methods did not allow. The method was less useful for identifying where information had come from, in, for example, the **Poster** and **Astro7** tasks, particularly if the information had been handwritten. I had access to the pre-printed sheets that were provided for tasks such as the **Poster Task** but again, if information had been handwritten it was not always possible to be sure where it came from particularly because it was often the same as information as children had found on the web.

Key finding from use of tool: The data collected in this way was key to establishing the completion rate in all of the evaluated tasks. Artefact analysis, following the **Poster Task** for example, confirmed that the emphasis on title design that I observed with the group I followed and observed throughout the task was actually common to most groups. The method also revealed errors made by children in the **Poster** and **Astro7** tasks and the places where they had struggled with language and comprehension, though the focus groups were arguably more useful in this regard. The approach was also useful for seeing the order in which task elements had been completed in **ARP1**, **ARP4** and the **Clydebank Blitz** task, revealing, for example, that girls were far stricter at adhering to the task order than boys were.

Focus Groups supported by artefacts are a powerful means for understanding how children perceive, approach and complete tasks and for understanding their sense of success and satisfaction with those tasks.

My hypothesis was that using artefacts as a support to encourage children to talk about work that they had produced would provide more and richer insights about their information seeking behaviour than would be possible via observation of tasks alone. I believe that this approach was a very successful one: it generated a great deal of useful data that was central to my answering several of the research questions, more so than was the case for any of the other methods employed. I would therefore argue that one of the key contributions of this thesis is in its demonstration of the utility of such an approach for evaluating children's information seeking.

Using this method, children could explain in detail what they thought tasks were about and what they were supposed to do. They could also describe in detail how they carried out tasks by referencing elements of the artefacts. Focus groups conducted in this manner were also effective for getting a sense of children's feelings about the quality of the work they had produced (this was generally not clear from observation), again with reference to specific elements of the artefacts, to each artefact as a whole, or relative to the artefacts produced by other groups or individuals in the class. Children were able to evaluate their individual performance and the performance of their groups in a reflective and candid way by referring to features of the work produced. Children were clear about what they did or did not enjoy about tasks in a manner that was far more expressive than was observed during observation. They were also able to suggest, with reference to the artefacts, how they might have tackled tasks differently in order to achieve a better task outcome. Discussing elements of the posters, for example, revealed that children had perhaps not always fully comprehended or digested every bit of material before using it on the poster and that they were just as unable to make sense of those pieces of information long after the task had been completed. It is difficult to say whether this was

always due to lack of comprehension at the time of choosing the information or whether the purpose and meaning of the information had been forgotten, but parallel research tools such as my observations of the poster presentations confirmed that the former was often the case: information was being selected without full understanding of its meaning.

Focus groups were less successful for finding out children's attitudes to specific pieces of information rather than to the artefact or the task as a whole, however children were often able to describe how and where information had been found (not always clear from analysis of artefacts) and why it had been chosen (not clear from artefact analysis or observations). Children were less successful when describing the detail of the processes involved in searching for and selecting each piece of information, but some insights about this were gathered via this method. When asked about how they went about completing a task, children tended to identify which information source had been used to source each piece of information e.g. "using the Internet", "looking in a book" but little of the detail about which websites/pages, books/ book sections had been consulted or viewed. Other methods revealed that children were sometimes mistaken about the source of the information selected, and this was equally so for the **P7** and **P5** children. Children could often say why each piece of information had been chosen for inclusion on the poster but sometimes answers to these sorts of enquiries were halting and unconfident.

The focus group using artefact method worked well with both the **P7** and **P5** classes and was most effective when evaluating the **Poster**, **Astro7** and **Clydebank Blitz** tasks. It was less effective with the **ARP1**, **ARP4** and **Rationing6** tasks, though some useful data was gathered in relation to those tasks via this tool. The work produced for **ARP1**, **ARP4** and **Rationing6** was far less structured and sparse relative to the other tasks and there were no images involved in these tasks. I put the success of the method in the other tasks largely down to the opportunity to discuss specific elements in turn as well as the artefacts as a whole, which meant that it was a weaker approach when

employed with the less structured tasks. The artefacts from these less structured tasks were also perhaps a little lost within the children's jotters and were less distinct products of the information seeking than the posters, for example and therefore these made for less obvious talking points than did the artefacts from those other tasks.

As we saw in the previous section, analysing artefacts provided useful insights into what children had focused on tasks. Using artefacts in focus groups provided an entry point for asking questions to confirm this and also for revealing how well children had understood both the task and the information found. Children generally responded by telling the story of the task in a natural, open way. I believe that the method was well suited for use in an ethnographic study: it made use of materials created by children during the course of a normal school day and allowed the researcher to understand the activities of the wider class by taking children, group-by-group, back to their experience of the task, even if in-task observation of all of those groups had not been possible. I would therefore argue that use of artefacts alone may not be enough to uncover all aspects of children's information behaviour but can offer insights that observation cannot provide in isolation.

Key finding from use of tool: The artefact plus focus group method was particularly powerful for confirming the disconnect between the teacher as generator of the imposed task, and the children as conductors of the task with regard to how each perceived success in each task. A large amount of useful data relating to each research question was generated via this method in relation to the **Poster**, **Astro7** and **Clydebank Blitz** tasks in particular.

The focus groups conducted with the younger children were reasonably successful for many of the reasons explored above. However, it was clear that on occasion these younger children were being led in their answers by what others in their group said. This was often about how well they had performed or had enjoyed the task or about the sources they had used. This effect was

particularly noticeable when, for example, one child said he wanted to know who had been in a spaceship with his astronaut: suddenly the rest of his group said they had wanted to find out the same. Given that no other child in the class had expressed anything similar, it seems likely that this boy had influenced their answers. Using this method with **P5s** revealed a further unreliability in **P5s** answers to other research tools: in a number of instances, particularly where boys were concerned, children contradicted themselves in the post-task questionnaire and in the focus group but were not consistently more accurate (corroborated by observation) in one than the other. Clearly, employing these methods had been slightly more effective with the **P7s** than the **P5s**, meaning that observation had been even more important for understanding the experiences of younger children.

Children's verbal group presentations can provide a good opportunity for evaluating their information-seeking behaviour in the classroom.

While I did not list it as part of my methodology specifically as I had not anticipated it being quite as useful a source of data as it turned out to be, nor had I considered it as a discrete element of the task, the presentation (lasting only a few minutes) that children gave in their groups at the end of the **Poster Task** emerged as a very rich activity for collecting data from an observational point of view. Being present during this phase of the task allowed me access to what each group thought was interesting or important about their poster, immediately it had been completed, with none of the delay inherent in focus group scheduling. Children's attitudes while presenting their posters arguably revealed something of their perceptions of the task and of their performance of it. The poster elements that they chose to highlight or omit in their presentations allowed me to gain a further sense of which elements of the task, materials and topic they had particularly engaged with, and how well they had done so. Questions asked by the teacher during and following each presentation gave a further sense of her expectations and priorities for the task and of how she viewed each group's performance. Additionally, questions from the wider

class that were directed to the groups as they gave their presentations gave a sense of what the children were truly interested in and what they valued with regard to the task and what they thought they were required to do for it, and also revealed what they knew and understood about the jobs on the posters, as well as what they knew and understood about the wider topic. The groups' answers to these questions were a further indication of their level of engagement with, perception of and understanding of the task and their success in it. As such, the observation notes that were made in relation to these presentations were invaluable when revisiting the **Poster Task** for analysis purposes and when preparing to interview the teacher.

Key finding from use of tool: The enthusiastic delivery of a presentation often coincided with a group having enjoyed the poster creation phase of the task. However, those groups who gave the most enthusiastic presentations tended to be the groups who also demonstrated that they had not understood the information well and or had included inappropriate information. The presentation phase revealed for the first time the jobs that children had favoured over others e.g. Munitions Worker, the reasons for which could then be explored further in the focus groups that followed. Presentations also revealed that some groups had not understood important aspects of jobs (such as, for example, that they had mainly been carried out by women) and also revealed that children were often unaware of serious errors on their posters. Most importantly, given that I was unable to observe every group as they performed this task, seeing the presentations gave me a better sense of each group's performance than I could gather via looking at the posters produced alone and therefore it was a powerful (and almost effort-free in terms of preparation) means of gathering these additional insights.

Use of existing materials can be a highly effective means of evaluating child information-seeking behaviour that requires no learning from the participants.

I very quickly realised after a few days of observation in the **P7** class that data gathered via many of the assessment tools that I had seen referred to on the topic planner and in the national curriculum documents would be straightforward to collect and also to analyse due to its routine familiarity and also due to its structured nature. The structure and details of deployment of each of these tools is discussed in Chapter 3 Methodology. Here I comment briefly on the utility of each.

Data from KWL Grids can be highly instructive when exploring children's motivations regarding information seeking in the classroom.

Data from the KWL Grid was available for the **P7** class only and offered a very useful perspective on how the children's perception of the WW2 topic had evolved as the topic progressed. I believe that the data collected from this source, particularly from the first and second sections of the grid, provided an important insight into children's motivations regarding the topic that was less available from other research tools. Such data had been available from the focus groups also, albeit in a less structured way, and this data was arguably more open to influence from others in the class. I felt that the answers given in the KWL grid were in most cases the individual thoughts of the children who had completed them: there were few overlaps in language used, even between neighbouring children, and I did not directly observe much collaboration as the grids were being completed despite being present as this occurred. This data was straightforward to analyse and corroborated some of the disappointment expressed by children in the focus groups about how the topic had evolved (or failed to evolve) in line with their expectations and the preference for military-oriented jobs in the **Poster Task**. One limitation of this dataset was that relatively few of the children had completed the third part of the exercise so

children's perspectives once they had finished the topic were less available than were those for the beginning and early stages of the topic.

Key finding from use of tool: The tool revealed that at the outset of the topic children's reported knowledge was oriented around the political, military and combat aspects of the war and that their desires for more information and learning were oriented around these aspects also. Boys and girls were fairly similar in their answers to these questions. The third section revealed what they felt they had learned or found out as it stood at the end of the topic, and for girls this tended to be facts related to the Home Front, where for boys the answers were again around combat and casualties. It seems therefore that girls' interests and priorities had shifted in line with how the teaching and learning had proceeded where those of boys had not. I had not found it straightforward to measure this type of difference in any other way so this method was very useful in that regard.

Use of Traffic Light Evaluation feedback tool data can be a highly effective way of understanding children's perceptions of task success when seeking information in the classroom.

This data was available for what were, arguably, the two richest tasks investigated for the thesis: the **Poster Task** and the **Astro7** task and it was particularly useful for understanding how well children thought they had performed the task. Again, this data was straightforward to collect and analyse. The collection tool was in a format that children were used to using, and was relatively easy to collect, though photocopying could not be relied upon to pick up the colour of traffic light that had been picked so annotations often had to be made. This data provided a useful means of gaining an overall picture of children's thoughts about how well they had interacted with each other during the task, within their groups. Using this method of data collection provided a quick means for seeing differences between groups and also between genders for the different factors upon which they were asked to evaluate themselves.

Key finding from use of tool: Those groups who had performed the **Poster Task** best were more self-critical about their performance of the task than were the poorer performing groups. Similar findings were evident for the **Astro7** task. In the case of both the **P7** and **P5** groups, overwhelmingly, girls rated their group's performance of these tasks lower than had boys for all of the categories, individually as well as overall. Previous studies have also shown that female children (and indeed adults) rate themselves lower on questionnaires than males do despite similar levels of attainment or success, so I am cautious about these results and, given the higher self-ratings seen by males via other research media used in this study e.g. in the focus groups, I would suggest this as a further contribution of this thesis: a health warning, were one needed, regarding over-reliance on self-reporting in studies of this kind.

The use of the ethnographic methodological approach chosen was largely successful for investigating the research questions and tools such as the traffic light evaluation and the KWL grid already available in the classroom were in some ways more effective tools than the pre and post task questionnaire that were completed. Artefact analysis was useful for understanding how and how well tasks had been completed and the focus groups using artefacts were a powerful means of taking children back to their earlier experiences of tasks. Teacher interviews were invaluable for finding out teacher expectations relating to more general aspects of the teaching and their observations of task performance at class and group level and the comments that teachers had written on work were necessary for understanding some of their priorities for individual tasks and their evaluation of the work of individuals. Observations aside, many of the research tools used tended to be slightly weaker at capturing the experiences of the younger children than they had been with the older children.

Study Limitations

There are of course a number of limitations of this work. Firstly, the study was carried out with a relatively small number of children (c. 50) and with only two age groups (9-10 years and 11-12 years), limited to one cohort of each age group. Educators, and those involved in the study were no exception, will often say that classes have personalities and that particular classes are weak, strong or even unusual for their age group or educational stage with regard to certain skills and abilities and it would be difficult to say whether I had worked with typical year groups in this study or whether such a group exists. For example, the **P7** teacher noted that a class that had completed similar tasks in a previous year had performed, to her mind, rather better than the current group. As described elsewhere in the thesis, I originally planned to involve even younger children in the study. However, some early discussions with the **P3** (age 7-8 years) teacher and a month of observational activity with **P4** (8-9 years) revealed a lack of suitable structured information tasks scheduled for completion during the 6 month period that I had set aside for the study, and in the case of **P3**, throughout the whole of the school year there was no task set that was immediately suited to the investigation. My study was limited to two topics only, where children would typically study four or five in a year. How could I be sure that the tasks that I picked to study in these topics were typical of those on other topics? I did make efforts to observe topic work sessions on a couple of other topics but found no suitable tasks to investigate in detail. This is arguably a bias of the study i.e. I chose to investigate tasks that fitted my idea of what an information-seeking task looks like based on my reading in the information science literature. I did of course consult teachers and academic educational professionals for reassurance in this regard to minimise this bias but it remains nonetheless. In addition, the study period was chosen to fit around the requirements of my part-time doctoral study timetable and the additional employment commitments (research and lab duties) that implies, which may have compromised some aspects of the study by limiting the investigation to only those tasks and topics that were being carried out during that period.

Another limitation of the study was in its involvement of only one school. Conducting the study in another school with a different ethos, geographical location and child/teacher demographics may have led to rather different results, particularly where the home information seeking aspects were concerned. It is likely that the physical dimensions of the school such as class layout had an impact on how tasks were carried out e.g. searching activity that happened on computers outwith the main classroom during the **Poster Task**, separate from others in a topic group and among the noise and bustle of children and staff from other classes. The lack of a school library was a key difference between this school and many other schools, which had an impact on the resources available, and the socio-economic and ethnic minority background of the local population may also have influenced the results. My study was limited in its involvement of only two teachers in the main study, with lesser input from the previously mentioned **P3** and **P4** staff, the head teacher and several educators from the university's education department. The study was further limited by being carried out in one local authority area only, with availability of resources in accordance with this e.g. the GLOW school intranet service was not available to children in this area. There were limitations of course due to country and curricular aspects, with it being confined to a relatively small (population 5 million) constituent country of the UK using a curriculum that was relatively new and somewhat untried by those using it and that has since undergone a level of revision.

The study was limited also by participation level in each task, and participation levels in the evaluation activities for each. While I think I have shown that my data collection coverage of both classes was extensive enough to answer the questions with a good degree of validity, some datasets were inevitably compromised. This happened for a variety of reasons: due to children being off sick or involved in other activities, due to jotters and other artefacts not being available for copying, and due to pre and post-task questionnaires not being fully completed, or indeed at all. Some potentially useful observation and other data collection opportunities were missed e.g. following the museum visit, I

neglected to collect the clipboards completed by children, meaning that I missed an additional potential opportunity to make an in-depth study of information seeking as it occurred outwith the classroom and had to rely instead on my observations and verbal feedback from children and teachers. My study was also limited by the time that I had in between sessions to perform data analysis in order to identify opportunities for more focused future data collection activities. While I managed this in regard to a number of aspects e.g. home information seeking, prompter data analysis might have allowed me to make a more targeted investigation of the interesting aspects emerging such as the influence on information seeking behaviour of the structure and format of the spaces e.g. worksheets, where retrieved information is to be recorded.

Another limitation of my study is in its reliance on group activities to report the experiences of individuals, though I have tried where possible to represent both the group and individual aspects of children's information experiences. An alternative study design might have taken more account of the roles undertaken by children searching in this type of group task situation. Observations aside, my research tools, while they were often based on protocols that teachers and children routinely used, were heavily reliant on self-reporting with all of the bias and limitation inherent in this. I have already outlined why I did not use logging or video recording in the study and, while I think that not using these techniques meant that I may have missed some details such as exact search terms or phrases that children used while searching, and comments that they made aloud during tasks, I believe that I captured enough detail to describe children's information seeking behaviour with a good degree of richness and therefore accuracy. In any case, I believe that the resultant dataset from recording over such a long period might have been somewhat unmanageable from a data analysis point of view. Another limitation of the study is in the lack of validation that I was able to undertake with certain aspects of the data. Many of the findings, particularly from the class-based information tasks were validated via the use of multiple research tools including observation and by gaining both child and teacher perspectives in multiple ways. However, on

aspects such as home information seeking the validity was arguably rather weaker as I was unable to observe the activity directly and did not have direct contact with parents who could have confirmed how the information seeking indeed took place. A stronger study design might have involved consulting the teachers again once the bulk of the data analysis had been undertaken. This was extremely difficult to achieve for a number of logistical reasons: the summer holidays intervened to a degree as did the maternity leave of one teacher and the promotion and move to a school 100 miles away of the other. Ideally, I would have liked also to have more of this sort of validation from the children. There was one significant barrier to doing this: the **P7** class had begun high school 7 weeks after the study was completed and was therefore much less contactable. How would an ethics application work in that situation for example? Further limitations came from weaknesses in some of the evaluation methods that I used, particularly with the younger children and the teacher-imposed time limits given to particular tasks meant that often the time and effort given to information seeking activity within that task was rather limited, which made the resultant data collection rather limited also.

While I have tried to describe the study in a way that would make it replicable in other classes and situations there are some key elements that make it difficult to replicate, for example in the changes that have occurred in Google and other search engines subsequent to the study. Search algorithms are changing constantly and children carrying out the same keyword searches on a given day via the same search engine using the same device will produce result lists that differ significantly from each other. Another limitation is that the study was conducted several years ago and arguably some of the data collected particularly in relation to information seeking for leisure purposes is slightly dated both in terms of the characteristics of online search tools and also the particular TV programmes, pop stars and games mentioned, but also the medium via which the leisure activities are accessed. Children's use of social media sites is continually evolving and a study conducted now might find different patterns of use e.g. heavier and more varied use of YouTube for

example. Additionally, a similar study conducted in the UK now, would be likely to find less laptop use and greater emphasis on tablet and smartphone use for information seeking.

I would like to conclude this section with an acknowledgment of the limitations of ethnographic research, particularly due to its reliance on the researcher as the main research instrument and to reflect on how accurate a picture of the situation I have been able to portray. Ethnographic researchers must be careful about the manner in which they present their work and bear in mind the limitations of conducting research in this way, which I am keen to do here. The story of the school community presented here is based on my personal interpretation of the individual and shared realities of the participants and a written account such as this thesis is inevitably reflective of my own culture, interests, training and purpose (Agar, 1996). Despite the sense of 'embeddedness' that can arise from being in the situation with participants, realistically, it is not possible to get any closer to describing the absolute reality of a situation than providing an impression and I would not claim to be completely omniscient about what occurred. However, I do think the use of multiple research tools alongside the observations has mitigated some of the biases of observation to a small degree, while perhaps introducing others. To achieve authenticity, when reporting the findings of an ethnographic study, researchers should limit the use of paraphrasing and avoid loose interpretation of participants' comments. I have therefore tried my best to make good use of actual quotations from participants when reporting my findings for this reason even if it has resulted in findings chapters that are somewhat lengthy.

How accurate and full a picture emerges from a study can be greatly affected by a researcher's ability to take notes and on the quality of their observational skills and I acknowledge that there may at points have been weaknesses in my ability to do this well due to distractions in the room or due to occasional preoccupation with thinking ahead about future research activities and emergent opportunities, or with other matters unrelated to the research. The

voice recordings I made following each research session were of great assistance in this regard but it was clear that there were often gaps in what I was able to record about certain situations. In any research with humans there is always a risk of the researcher affecting the behaviour that he or she is studying. This is even more the case in ethnography and I have no doubt that there were some instances where children, and perhaps even teachers, acted somewhat differently than they would have had I not been present. I did try therefore to conduct myself in a manner that would “lead to sympathetic understanding with the population” (Pickard 2007, page 141). An ethnographic researcher should be continually be asking herself questions and in this situation one should “become aware of your own perspective (your assumptions) with its in-built interests, biases, opinions and prejudices (Rallis and Rossman, 1998, page 26). I acknowledge the effects that my own age, sex, class and educational background may have had on my observation and interpretation of situations. I acknowledge also the influence that my own experiences as a school child in a rather different era, and prior interactions with teachers including those in my immediate family, may have had on the data analysis undertaken.

Chapter Summary

In this chapter I discussed the findings from Chapters 5, 6 and 7, focussing particular on how the findings related to the five research questions **RQ1-RQ5** generated from Chapter 2’s Literature Review and I discussed the additional key themes that developed from the data. The chapter discussed also the effectiveness of the methodology employed, with particularly emphasis on the artefact method and its use in a variety of different tasks. The chapter discussed also the findings in relation to understanding child information behaviour in the classroom with reference to the use of real tasks and the influence of out-of-school information experiences. Limitations of the work were discussed, with particular reference to the scope of the study and the ethnographic approach undertaken.

Chapter 9 Conclusion and Future Work

Introduction

In this chapter I conclude the thesis by restating the contributions that I believe the work makes to our understanding of child information behaviour. I outline also the contribution that the study makes to the design of effective evaluations of child information behaviour. The chapter concludes with a discussion of possible directions for future work that were suggested by my findings, both in terms of areas that require further investigation and those that would be fresher areas of enquiry.

Contribution to Understanding Child Information Behaviour

In writing this thesis and conducting a study such as the one described here I believe I have contributed to our understanding of child information behaviour in the following ways. The literature review provides an overview of what is known about child information seeking behaviour, how it relates to child developmental theory and how this behaviour contrasts with adult information behaviour. Further, the literature review provides evidence of a reliance on researcher-designed tasks in studies of child information seeking in the classroom and identifies a gap in the literature of studies that investigate the real information tasks that children are encountering in the classroom.

My findings add to our understanding of how children conceive success in their information-seeking behaviour and the disconnect between their notions of success in this regard and those of the adults who set many of the formal information seeking tasks they must carry out. The findings provide further evidence of the types of support that children require when conducting information seeking tasks in the classroom, and makes some recommendations about how this behaviour might be better supported. The reporting of these findings distinguishes the support required in information seeking by children in late primary school from that required by younger children. The work also

identifies differences in the ways in which support for child information seeking manifests itself in and out of school and also how information experiences in each of these environments both contrast with and influence each other. A further contribution is in the evidence presented regarding children's information preferences, particularly with regard to the disconnect shown between children's attitudes to using certain types of resources and the eventual success they have in using these. The work contributes also to furthering our understanding of differences in information behaviour between boys and girls, providing evidence that girls and boys are behaving rather differently from each other with regard to their leisure information seeking in particular and of the disconnect between the self-evaluation and actual success in information seeking of these two groups.

Contribution to Evaluating Child Information Behaviour

The study itself one of relatively few that have studied teacher-imposed information tasks rather than researcher-imposed information tasks, and evaluates the behaviour of children as they tackle these. It offers perspectives from both children and teachers on child information seeking behaviour, where often studies have sought only child or, occasionally, teacher or parental perspectives.

A further contribution is in the study's demonstration that the use of real tasks in an evaluation of child information seeking in the classroom is not only feasible but that it can be very successful in understanding many facets of child information behaviour in a way that is less easily achieved via other more experimental methods. An ethnographic methodology for investigating real information tasks in the classroom is outlined and evaluated. The work demonstrates the success of the methodology for investigating real tasks with different age groups of children and with their teachers, thus contributing to the body of knowledge on the use of ethnography in such situations. The particular successes and challenges of using this approach are highlighted and it is hoped

that future researchers will find these to be of use when designing studies of their own in this area. A further contribution of the work is its description of a method for evaluating child information seeking using focus groups where the artefacts of that information seeking are evaluated. The benefits of using this approach, particularly with older primary school children are outlined with reference to the specific findings that were uncovered using the technique. The study makes a further contribution in its demonstration that the out-of-school information seeking of children can be investigated successfully to some degree without directly entering that environment, and that the insights gathered from such an investigation can be meaningfully used to inform our understanding of the information seeking that children are doing elsewhere in their lives.

Future Work

There is of course much room for further work in understanding child information seeking behaviour and I would like to discuss a few areas where I think it might be pertinent to carry out further studies based on ideas that emerged from the research discussed in this thesis.

Perhaps worthy of exploration in a future study is the phenomenon of the child expert that emerged from discussions around leisure information seeking with boys in particular. It would be worth exploring, for example, how these information “geniuses” acquired the knowledge required in order to be regarded as experts in their particular area of knowledge, and how they had come to be regarded as such by other children. It would also be interesting to investigate how big the circle of influence of these children is, for example, whether it extends beyond friendship groups. It would also be of interest to identify specific examples of the types of information imparted and the circumstances in which this happens e.g. whether information from these experts fills a gap that cannot be filled by other information seeking or whether acquiring information in this way is a preferred option by these children due to,

for example, convenience, trust or friendship. As reported in the study, this phenomenon emerged in relation to information sharing among boys only but it would be worth exploring whether it is common among girls also, and whether and to what degree the phenomenon manifests itself in younger age groups, and in other cultures and locations.

One area that I believe would also be worthy of further exploration would be the ways in which the format and structure of the space or final destination of information found influences how information seeking is carried out by children. Children in both age groups in this study seemed to be compromised in their information seeking by requirements to, for example be neat when presenting the final (often the only) version of their work. Such requirements often led to very low volumes of information being searched for, selected and presented relative to the time given for the task. There was also evidence that too great a degree of openness about the format in which information was to be presented could also cause problems e.g. the younger children showed real difficulties in structuring the information they found, often meaning they repeated elements, duplicating some of the information seeking work they had already done. I would have been interested to see how much more effective their searching might have been had a structured template been provided for this type of task. This structural or presentational element of information use is something that I believe would be suitable for further study.

Children in this study showed on multiple occasions, in both the tasks investigated for this thesis, and in several ancillary tasks on historical sources, the difficulties that they had in selecting images that were relevant to the information tasks they were completing. I uncovered a lot of evidence that suggested that children even in the 11-12 age group can have serious difficulty in understanding, in particular, the difference between modern photographs of items related to the past and photographs (and occasionally film) that were taken in that past, and assessing whether these would be appropriate for use in particular situations. The study uncovered some evidence that this issue

extended to historical and contemporary documents also, but the issue with images seemed particularly acute. Children struggled with assessing the relevance of photographs in both group and individual information seeking situations. In the former, children were easily influenced by their peers when making relevance judgments and exhibited a lack of critical thinking in this regard. Given the increasing expectation that children should use multimedia in school projects, and the proliferation of faked and altered images online, a further investigation of how children assess photographs for relevance for use in school tasks is warranted.

While task design was not the focus of this thesis per se, though in earlier versions of my research proposal it did feature to some extent, it often occurred to me while conducting the research that the tasks that I saw being set by teachers were not always well-designed and often, such as in the case of the **Poster Task**, had guidelines or instructions that meant children would be unable to complete the task in the manner in which teachers required them to. For example, children were instructed to look online for images to use in their posters and spent a lot of time doing this but actually had no way of then getting the images, even if found, from the screen on to the page as there were no printer facilities available and the teacher had not expected that there would be either. A future piece of research might investigate the challenges that teachers face when designing meaningful information seeking tasks and how their priorities in doing so and the constraints of the curriculum contrast with the priorities of information professionals such as librarians.

The study provided some evidence of the leisure information-seeking behaviour of children, particularly with regard to their interactions with adults and others outside of school. I believe these information interactions are worthy of further exploration and have given some consideration to how this might proceed, given the difficulties of conducting observations in the home in particular. (Nicol and Landoni, 2014) made the case for the use of diary studies to do this, given the demonstrated effectiveness of this technique when studying adult

leisure searching (Elsweiler et al., 2010) (Sohn et al., 2008). Other researchers have shown that when carefully designed, diary studies can be very effective with children (Markopoulos et al., 2008) so long as the keeping of the diary does not seem like homework. Use of diaries in such studies is clearly more suited to work with older children given their better literacy skills and therefore a research technique such as the “parent evaluator” might be used instead with younger children (Markopoulos et al., 2008). This technique was originally designed for evaluating entertainment products at home and as such appears to have potential for investigating leisure searching with younger children also. Such research in the home might also make use of the type of video interview technique employed by (Colombo et al., 2012) for example. They showed the benefits of using video interviews when investigating child book selection, for example and as such technology becomes more widespread it becomes an increasingly promising medium for investigating child information behaviour in a variety of circumstances.

I believe that while I have shown the benefits of using the focus group plus artefact method for evaluating child information seeking there are elements of this approach that are worthy of further investigation. A further exploration of the use of the method with even younger children would be worthwhile I believe. (Nicol and Hornecker, 2012) demonstrated the effectiveness of the technique when investigating child experiences with interactive technology and showed how it could be usefully employed with children as young as five years old. An investigation of the technique’s applicability in investigations of information seeking behaviour with younger age groups would therefore be a worthwhile undertaking. I believe that it might also be of worth to investigate whether employing the technique with teachers and other educators, either individually or in groups, might be an effective way of eliciting their perspectives as task setters of information tasks completed by children.

Chapter Summary

This chapter concluded the thesis by restating the contributions made by the work, in particular in how it adds to our understanding about disconnects between child and adult perceptions of success in information seeking, variations with age with regard to choice of information channel and the support needed for information seeking, the influence of situation and context on child information seeking and the influence of gender on this also. The chapter further made the case for the contribution of the thesis in the form of a description of a methodological approach for evaluating child information seeking using real tasks, employing ethnography and incorporating a focus group method using the artefacts of information seeking. The chapter's additional contribution was in its discussion of ideas for future work based on the study undertaken, including an investigation of children's use of each other as experts, teachers' conceptions of good task design, further enquiry regarding children's relevance judgments on images in particular and wider exploration of the use of the artefact method with different age groups and in different contexts, and as a tool to gain the perspective of both task setter and task performer.

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Glossary of Terms

Anderson Shelter	A small prefabricated air-raid shelter of a type built in the UK during WW2.
ARP	Air Raid Precautions.
ARP Warden	A volunteer tasked with duties such as ensuring the blackout was observed, sounding air raid sirens, guiding people into air raid shelters, issuing and checking gas masks, evacuating areas around unexploded bombs, rescuing people from bomb-damaged buildings.
Auxiliary Fire Service (AFS)	Part of the UK Civil Defence Service. Its role was to supplement the work of existing fire brigades at local level. It was formed in 1938. The AFS and local brigades were superseded in 1941 by the National Fire Service. Members were largely unpaid volunteers.
Baldwin, Stanley	British Conservative Prime Minister 1935–7, a few years before the outbreak of WW2. Preparations for the impending war were instigated under his leadership.
BBC	British Broadcasting Corporation.
Billeting Officer	A person tasked with assigning quarters to armed forces personnel either in barracks or in non-military accommodation. A role often performed by women during WW2 UK.
Blitz	The German air raids on Britain in 1940–1941
Blackout	A period when lights must be turned out/covered to prevent being seen by the enemy during an air raid. Also: the materials required to do this e.g. curtains.
Boy in the Striped Pyjamas, The	A 2006 novel by author John Boyne about a young boy in a Nazi concentration camp.
Cenotaph	Memorial in central London commemorating the fallen of both world wars.
Chamberlain, Neville	British Conservative Prime Minister at the outbreak of WW2 (1939-40).

Churchill, Winston	British Conservative Prime Minister for the greater part of WW2 (1940–45).
Classroom Assistant	A paid role in Scottish schools, assisting teachers with a range of tasks in the classroom. Classroom assistants are not supposed to be used as stand-in teachers providing cover for whole classes. No formal qualifications are required for the role.
Clydebank	A former industrial town on the north bank of the river Clyde in west central Scotland known for its 19 th and 20 th century shipbuilding and manufacturing industries.
Clydebank Blitz	A series of bombing raids by German aircraft in March 1941 that destroyed ships, factories, municipal and domestic buildings and killed 528 citizens of the town of Clydebank leading to temporary and, in some cases, permanent evacuation of the town.
Clydesdale Bank	A commercial bank founded in Scotland with branches throughout the UK.
Conscription	Compulsory military or related service. Applied to UK men aged 20-22 at the outset of WW2 in 1939, thereafter to men aged 18-41 (later 51) and women 20-30, with some exceptions. Conscription was also in use in previous UK conflicts e.g. WW1.
Curriculum for Excellence	The curriculum for children aged 3-18 years currently in place throughout Scotland's state school and nursery sector. Phased introduction since 2009.
Dad's Army (1)	A nickname for the Home Guard.
Dad's Army (2)	A BBC TV situation comedy (and feature film) about the Home Guard originally broadcast between 1968-77 and repeated often since on BBC and other channels.
Dig for Victory	A government campaign slogan in the UK and elsewhere during WW2 encouraging citizens to create allotments on any available space and grow food. The slogan featured on many propaganda posters.
Dunbartonshire	A historical county in west central Scotland situated to the north of the river Clyde and to the west of Glasgow.

Evacuation	Evacuation of children and adult civilians to rural areas from UK cities considered to be aerial bombing targets began in 1939 on the declaration of war. Many evacuees returned home within weeks due to the lack of military action or due to personal preference. There were co-ordinated evacuations throughout the remainder of the war in response to the Blitz and other threats.
Frank, Anne	Writer of "The Diary of Anne Frank" who died in a Nazi concentration camp following a period spent in hiding in the Netherlands.
Gas Masks	Devices supplied to every adult and child in the UK prior to the outbreak of WW2 in 1939. Masks had to be carried at all times by law and there were special devices for babies and small children to use.
GCC	Glasgow City Council.
Glasgow City Council	The local authority that governs the running of schools and other educational services in the city of Glasgow in west central Scotland.
GLOW	Schools intranet service and e-learning platform used by selected schools in Scotland since 2009.
Goodnight Mister Tom	1981 children's novel by Michelle Magorian, about a London boy who is evacuated to the country at the outset of WW2. A 1998 TV adaptation of the same name.
Head teacher	The name for the person who leads a state school in Scotland. Invariably a qualified teacher albeit with a non, or occasional teaching role. Responsible for day to day running of school and for ensuring curriculum is followed, with input into how this will be done in practice, assisting with planning and developing teaching and learning activities and staff supervision.
Hide and seek	A children's game in which players hide and the others have to look for them.
Home Front	The civilian population and activities of a nation whose armed forces are engaged in war abroad.
Home Guard	The British citizen army formed in 1940 to defend UK from invasion, disbanded in 1957.
ICT	Information and Communication Technology

Jotter	Local word for an exercise book
KWL Grid	A teaching and learning aid consisting of 3 questions: 1 What Do You Know? 2 What Do You Want to Know? and 3 What Have You Learned? given to learners for completion at the start (questions 1 and 2) and end (question 3) of a learning experience.
Marbles	A game in which marbles (small glass balls) are rolled along the ground with the aim of hitting those of one's opponent.
Morrison Shelter	A movable air-raid shelter, shaped like a table and used indoors.
Munitions Workers	Those engaged in making weaponry in factories, often women.
P.E.	Physical Education/Gym class.
People's Palace Museum	A municipal museum that tells the story of Glasgow and its people from 1750 onwards.
Phoney war	The period between September 1939 and May 1940 when the anticipated invasion/bombardment of Allied territory by Germany did not occur despite widespread expectation and extensive preparation.
Primary education	Full time education in Scotland between ages 4-11 years.
Principal teacher	A promoted teaching role in Scottish schools that involves responsibility for curriculum development and staff supervision as well as increased involvement in the general running of the school and responsibility for designated subject areas.
PSD	Personal Social Development.
Rationing	A fixed amount of a commodity officially allowed to each person during a time of shortage, as in wartime. Implemented in the UK throughout WW2, applicable to food and clothing in particular and lasting for several years beyond the end of the war in 1945.
RAF	Royal Air Force: the airborne branch of the U.K. armed forces.
Scotland	A semi-autonomous country with its own legal system that forms part of the UK.

Scottish Education System	Scotland has a long history of universal provision of public education, and the Scottish education system is distinctly different from those in the other countries of the United Kingdom i.e. England, Wales and Northern Ireland. Education in Scotland is overseen by the Scottish Government.
Scottish Government	Elected body with responsibility for matters devolved from UK Parliament such as education, health, justice, policing, rural affairs, economic development, transport.
Scottish Parliament	The devolved national, legislature of Scotland, located in the capital city, Edinburgh. Often known as "Holyrood". The Scotland Act 1998 gives the Scottish Parliament legislative control over all education matters.
Secondary education	Full time education between ages 11-18 years.
Steamie	Local word for a communal laundry (archaic).
Topic	In the context of Scottish primary education, a themed educational unit taught over the course of several months with planned activities that encompass multiple subject areas e.g. language, maths, physical education.
Topic planner	The schedule of activities and success criteria that senior teaching staff develops for each topic area.
VE Day	Victory in Europe Day. 18 th May 1945. The official end of hostilities in Europe after the Allies of WW2 accepted the unconditional surrender of Germany's armed forces.
Victorians	Inhabitants of the UK during the reign of Queen Victoria 1837-1901.
Whitehall	Area in central London where Cenotaph war memorial is located as well as UK government buildings.
Women's Land Army	British civilian organisation during WW1 and WW2 in which women worked in farming, replacing men called up to the military.
World at War, The	A 26-episode British TV documentary series from 1973-74 chronicling events of WW2.

World War 1	The period of conflict 1914 to 1918 between the Allies: Britain, France, Russia, and Italy and the Central Powers: Germany, Austria-Hungary, Bulgaria, and the Ottoman Empire.
World War 2	The period of conflict 1939 to 1945 involving a majority of the world's countries and arranged, largely as a war between two factions: The Axis (Germany, Italy, Japan etc.) and The Allies (UK+Commonwealth, France, Poland, USA etc.)
WW1	World War 1.
WW2	World War 2.
Zlata's Diary	A 1993 non-fiction book by Zlata Filipović, a young girl living in Sarajevo while it was under siege during the Bosnian War.

A note about UK/United Kingdom vs. Britain vs. Great Britain: Throughout this thesis, these terms may appear to be used interchangeably. While it would never be my intention to ignore the important differences in meaning of these terms, the complexity of dealing with multiple often-unidentified sources, participant comments and the discussion of multiple time periods from multiple perspectives and contexts has made it close to impossible to be consistent and accurate about the usage of these often fraught identifiers. I do not believe however that this particular lack of consistency has had any bearing on my interpretation or reporting of results or the discussion of my findings. Some readers may differ.

Appendices

Appendix 1: Diary of Key Research Activities

	Class Activity	Research Activity
28 th Jan	P7 The teacher introduced the idea of 'Finding Out About the Past'.	P7 Class Observation
2 nd Feb	P7 Introduction to topic: The Road To War	P7 Class Observation
4 th Feb	P7 Definitions Exercise	P7 Class and Group Observation
9 th Feb	P7 Jobs during the war First session of Poster Task.	P7 Class and Group Observation
11 th Feb	P7 Jobs during the War. Second session of Poster Task	P7 Class and Group Observation
18 th Feb	P7 Air Raid Precautions Introduction of Carousel of Tasks and Topic Box Watch DVD World at War	P7 Class Observation
23 rd Feb	P7 Air Raid Precautions Carousel	P7 Group Observation (Group 1/A) as they completed ARP1 the book research task.
25 th Feb	P7 Library Visit	P7 Class and group observation.
2 nd March	P7 Air Raid Precautions Carousel	P7 Observed group A researching the items that they'd put into a case for the air raid shelter with second part to research the same headings as they had done before with books this time using computers. P7 Observed 4 children from group 2.
4 th March	P7 Air Raid Precautions Carousel	P7 Observed group A as they completed ARP4 (internet search) having already completed ARP1 and observed group B as they completed ARP4 (internet search) having not yet completed ARP1 (book search).
16 th March	P7 Air Raid Precautions Carousel	P7 Observed Group C as they performed ARP4 (Internet Search) and Group B as they performed ARP1.
18 th March	P7 Air Raid Precautions Carousel	P7 Observed Group B who were finishing the book task.
25 th March	P7 Visit to museum+ new topic+completion of sources task	P7 Observed museum activities P7 Observed intro of new topic about evacuation P7 Observed sources tasks
30 th March	P7 Evacuation Tasks Carousel	P7 Class and group observations
1 st April	P7 Interview with class teacher	P7 An interview was carried out with the class teacher and audio recorded.
20 th April	P7 Clydebank Blitz topic intro	P7 Class observations and observation of photo task.
27 th April	P7 Rationing Carousel	P7 Class observation+ observed group as they carried out research on the BBC website. Task Ratioinin6 group 6.

	P5 Astronaut topic	P5 Spent first introductory session with P5.
29 th April	P5 Astronaut topic P7 Rationing Carousel	P5 Observed a group of 3 as they completed a task researching information on the Internet about astronauts. Each child had 1 astronaut to find out about. Each had access to a laptop computer. P7 Observed 2 groups (one with 2 children, the other with 5) as they completed the Internet research task Rationing6. I completed an interview with both groups.
4 th May	P7 Rationing Carousel Rationing6 P4 Publisher Task	P7 Observed two groups doing Rationing6 P4 Observed two groups
6 th May	P5 Astronauts task	P5 Class and group observations
11 th May	P7 Rationing Carousel	P7 Observed the final group (of 6) as they completed the task using the BBC website Rationing6.
13 th May	P7 Last session on ww2 P5 Astronauts Task	P7 Class and group observation. Collection of materials. P5 Observations of Astro7
18 th May	P4 Publisher Task	P4 Group Observations
20 th May	P5 Astronauts Task	P5 Observed Group 4
25 th May	P7 Poster Task focus group P4 BBC Task	P7 Group 3 Munitions Worker and Group 4 Billeting Officer P4 Observations
27 th May	P7 Poster task focus group P5 Solar system final session	P7 Group 6,5,2,1 P5 Class observation
10 th June	P5 Solar system	P5 Focus Groups
15 th June	P5 Solar system	P5 Focus Groups
21 st June	P5 Solar system	P5 Focus Groups
28 th June	P7 Interview with class teacher	P7 1hr recorded audio with teacher

Appendix 2: Library and Museum Visits

Library Visit: 25th February

Today's session was a visit to the local library: XXXX Public Library. The P7 class was accompanied by the researcher, the class teacher, a classroom assistant whom the children all knew and who knew all the children by name. The library is a one room building around 5 minutes' walk from the school. The children's books are located in 2 U-shaped corners with fiction and baby books in one corner and non-fiction and teenage titles in the other. The children's area is decorated with drawings done by children of literary and popular culture figures. One boy in the class pointed out a drawing that he himself made.

The teacher's motivation for the library visit was to obtain further books on the topic being studied. She felt that the amount of resources that were currently available in the school were not adequate for the class's needs. Children had been asked to bring their library cards with them to class that day in order that they might take books home on loan.

On arrival at the library, a library assistant sat the children in the children's corner. Adults accompanying the class sat at the back. It was noticeable that all girls sat closest to the librarian with the boys sitting further back. The librarian asked the children how many of them had a library card. Almost all children appeared to have one though not all had remembered to bring theirs that day. She explained how to register for a card if they didn't already have one and reassured them that if they had forgotten their card knowing their home address would be enough to allow them to borrow a book that day. The library assistant then asked the children if they knew about the difference between fiction and non-fiction and pointed out where in the library corner these were to be found. She also explained about how some of the books were grouped by age and the permission they would need before accessing the teenage books. She explained about the reference books in the children's section, which were

rather limited in number. She did not make any reference to any of the adult resources in the library and mentioned nothing about resources that were not books. The library assistant read to the children from a book by Terry Jones, a fictionalised account of a historical event. Children seemed engaged by the story and interacted well with questions.

Task: the library assistant asked the children to split into groups of 3. She explained the Dewey system in simple terms to them and gave an example of how to find a book on a particular topic using the Decoder chart and the numbers on the spines of the books. Each group was given 2 topics (one or two word phrases) on which to find books e.g. 'Basketball' 'Ancient Greece'. All children participated well in the exercise with all managing the task eventually. One group struggled with 'costume' not thinking to use 'clothing' as a synonym. The classroom assistant directed them in solving this task.

Children were then allowed to find books about the topic at hand i.e. WW2. There were in fact very few of these. During this activity the classroom assistant was observed to be very much directing the action and found most of the books on behalf of the children. The other books were found by children directed by the teacher. One child picked up a book in the display area that had been pointed out by the library assistant but otherwise no relevant books were found by children acting alone or with a classmate.

Children were also then allowed to choose books for their own personal reading. General observation: girls tended to choose horror and fantasy novels and non-fiction books about animals. Boys tended toward non-fiction e.g. football, card tricks. All children were observed to be 'hunting in small packs'.

On returning to the class the children who found books on the topic are asked to explain and describe the books in turn and how they found them. In all cases they said they had been directed to them by one of the adults.

Books found:

- Goodnight Mr Tom – novel about evacuation
- 'Victory'
- Anne Frank (known to some of the children already from a reading book)
- 'Can I come home please'
- 'World War 2'
- 'WW2 Children – Anne Frank'

The teacher led a short discussion on the subject of the school's own library. She explained that the Dewey system is in place there too. She also made much of the fact that due to space limitations (the school is close to capacity and will soon have a new building annexe) the school library is not as good as it was. It no longer has a dedicated room and the books are on shelves in the open area where there are generally small group teaching exercises underway which makes accessing the library difficult. One of the children asked whether they could borrow from the school library. Another asks whether they could work to make it better and suggests that children from older age groups could act as librarians.

On talking to the class teacher following the session, she felt that the visit had been a disappointment. It had not been topical enough and the children had emerged with few books about the topic. Some of those that had been acquired were just additional copies of books that the classroom already had

P7 Class Visit to People's Palace Museum Glasgow 25th March

Today the class visited the People's Palace Museum in Glasgow as part of their topic work. 3 adults accompanied children to the museum: the class teacher, a classroom assistant and the researcher. Each adult was to stay with 2 of the topic groups meaning they were supervising around 8 or 9 children each.

Before leaving school to go to the museum the children were given a clipboard with a series of questions to answer. Clipboards were shared between 3 children.

The teacher asked the class a few questions while still in the classroom: a few had been to the museum before but none could remember what was on display there. When asked what they thought they might see there, several children said they thought they might see a bomb shelter.

When at the museum, the groups were led to each exhibit by the adult accompanying them. Once they had finished their tasks, they were allowed to look at any other exhibits that interested them. The task completion exercise took around 40 minutes, with 10 minutes allowed for looking at other exhibits.

The museum has an area on the 1st floor given over to exhibits (mainly reconstructions with a few genuine artefacts in glass cabinets) about WW2. The teacher had been to the museum a few days before the visit to design the exercise to be completed by the children. The exercise was centered around 4 specific displays, the first 3 of which had objects that could be handled: an Anderson (bomb) shelter, a Dairy shop, a Steamie (wash house), and a display cabinet about Air Raid Protection wardens.

The classroom assistant gave the children a short talk about money that was used at the time of the war and let them see some replica coins. She told them they would see some information boards that used the old money system.

Questions children had to answer:

The Anderson Shelter

- How many people could comfortably use an Anderson shelter at the same time?
- Name one thing you would take into the shelter with you?

The Dairy

Find out how much these items cost in the Dairy during WW2:

- Butter, Tea, Condensed Milk, Jam, Eggs

The Steamie

- Name the equipment used in the steamie.
- What are the main differences between washing clothes now and during WW2?

ARP Warden

- List the equipment and pamphlets used by the ARP warden

Observations:

- The children holding the clipboards did all of the work. No team work or paired work was evident.
- Children were unwilling to read any of the written material and seemed almost not to notice that it was there unless they were specifically directed to it by an adult. Even then, they were not keen to read it.
- The classroom assistant was keen to point out to all of the children exactly where they might find the answers.
- Displays not related to WW2 were a constant distraction, particularly if they included audio or video resources. Children got a lot of enjoyment from these and returned to them many times.
- Several children were observed talking about displays of artefacts from WW1 and from the 1990s believing them also to be related to WW2.
- Several children were observed copying down information from displays that were unrelated to the overall topic or to any of the sub-topics described on the clipboard.

I made a note to discuss this visit during the forthcoming interview with the teacher.

Appendix 3: Questionnaire: ARP1, ARP4, Rationing6 and Astro7 Tasks

Date:	Group No:	Task No:	Task Description:
-------	-----------	----------	-------------------

Before Task Begins:

How important is this task?

How are you going to go about doing it?

How easy do you think this task is?

1	2	3	4	5
very easy				very hard

How much information do you have already that will help you with the task?

1	2	3	4	5
very little				a large amount

After completion of task:

How easy did you find it to do the task?

1	2	3	4	5
very easy				very hard

How quickly did you manage to do the task?

1	2	3	4	5
very quickly				very slowly

How well do you think you worked with the others in the group?

1	2	3	4	5
very well				very badly

Appendix 4: Survey: Leisure Task

This is a questionnaire about your hobbies and interests. Read the questions carefully. Try to answer honestly. Ask for help if you are not sure.

My Name:

Age:

Class:

My favourite tv programmes:



My favourite books:



My favourite games:



What activities do you like doing in your spare time away from school? Try to name at least 2 things:

Have a look at the hobbies and interests below and tick the box that describes how you feel about each one. Tick one box only for each hobby.

	Not at all interested ★	Slightly Interested ★★	Interested ★★★	Very interested ★★★★	Fascinated! ★★★★★
Football					
Rugby					
Cricket					
Horse-riding					
Swimming					
Ice-skating					
Skateboarding					
Cars /Formula 1					
Cycling					
Athletics					
Tennis					
Badminton					
Pets					
Wildlife/Nature					
Fashion					
Pop Music					
Celebrities					
Films					
TV Programmes					
Art and Craft					
Computer games					
Science & Technology					
Scouts / Guides /BB					
Religion					
Reading novels					

Think about the hobbies and interests (no more than 5) that you said you were Very Interested in or Fascinated by. How do you find out about them? Tick as many as you like.

Write the hobby here ↓	Library books	Books at home	Websites	News papers	Magazines /comics	Radio	TV	Friends	Family

What are your favourite ways of finding out about your hobbies and why?

How do you search on the Internet for information about your hobbies? (please tick as many as you like)

Google	
Ask Jeeves	
I type in the search box on my internet browser	
Another way (describe)	

What do you like to search for on the Internet? (please tick as many as you like)

Music	
Games	
Celebrities	
Videos	
Favourite characters	
Something else (Please describe)	

What are your 3 favourite websites? Eg www.disney.com

- 1
- 2
- 3

How do you know about these websites? (Please describe).

- 1
- 2
- 3

I have a computer at home True /False

I have internet access at home True/False

I have a library card True/False

How often do you use the following:

	Never	Occasionally	Once a week	A few times a week	Every day
Email					
Bebo					
Facebook					
Myspace					
Twitter					
MSN chat					
Mobile phone					

Is there anything else you'd like to tell me about how you find out about your hobbies and interests?

Thank you for answering the questions!

Appendix 5: Focus Group Schedule: Poster Task

- Do you remember doing the Poster Task?
- What did you have to do? (As a group, plus what role each group member took)
- Was the task enjoyable?
 - What made it enjoyable/unenjoyable?
- Where did the information come from?
 - (ask them to point out each piece of information in turn and ask them to explain)
- Why did you choose the pictures?
 - (ask them to point out a picture and ask them to explain)
- What is the best piece of information on the poster?
 - Why?
- How good do you think the poster is?
 - Explain
- What would you give the poster out of 10?
 - Why?
- What would the teacher think of the poster?
- Do you like the WW2 topic?
 - What have you liked/not liked?

Appendix 6: Focus Group Schedule: ARP1, ARP4 and Rationing6 Tasks

- Do you remember doing the ARP1/ARP4/Rationing6 Task?
- What did you have to do for the ARP1/ARP4/Rationing6 task?
- Was the ARP1/ARP4/Rationing6 task enjoyable?
 - What made ARP1/ARP4/Rationing6 enjoyable/unenjoyable?
- What was easy or hard about the ARP1/ARP4/Rationing6 task?
- Where did the information for ARP1/ARP4/Rationing6 come from?
 - Give examples
 - Is it good information?
- How good do you think your work is for ARP1/ARP4/Rationing6?
 - Explain
- What would you give your work on ARP1/ARP4/Rationing6 out of 10?
 - Why?
 - How could you have done ARP1/ARP4/Rationing6 better?
- Do you like the WW2 topic?
 - What have you liked/not liked?
 - What was your favourite task?

Appendix 7: Focus Group Schedule: Astro7 Task

- Do you remember doing the Astronauts Task?
- What did you have to do?
- What was the fact file for?
- Which astronaut did you have?
 - Why did you pick her/him?
 - Did you know about her/him before the task?
- Was it an enjoyable task?
 - What made it enjoyable/unenjoyable?
- Where did the information come from?
 - (ask them to point out each piece of information in turn and ask them to explain)
 - Is it a good bit of information?
 - Why?
- How good do you think your fact files are?
 - Explain
- What would you give yourself out of 10?
 - Why?
 - How could you have done the task better?
- Do you like the Solar system topic?
- Which was your favourite task on the topic so far?

Appendix 8: Focus Group Schedule: Clydebank Blitz Homework Task

- Do you remember doing the Clydebank Blitz Task?
- What did you have to do?
- Which question was the hardest/easiest?
 - Explain
- What did you know already that helped you with the task?
 - How did you know about it?
- How long did it take to do the task?
- How did you look for the information?
 - Examples
- Where did the information come from?
 - Examples
- Was it good information?
 - Why?
- What was easy/what went well about the task?
- What was difficult/what went badly?
- Was the task enjoyable?
 - What made the task enjoyable/unenjoyable?
- How good do you think your work is?
 - Explain
- How could you have done the task differently?
- Do you usually use a computer to do your homework?
- Do you like the WW2 topic?
 - What have you liked/not liked about it?
- What was your favourite topic this year?

Appendix 9: Focus Group Schedule: Leisure Task

- What are your hobbies/interests?
- How do you know about them?
- Are there hobbies that you have to find out things about rather than just do them?
- What sort of things you want to know about your hobby?
- How do you find out about them?
- Which websites do you use?
- How do you know about these websites?
- What's a good book?
- Are some books better than others? Why?
- When/if you use the computer at home do you use it with anyone else?
- What are you not allowed to do on the computer at home?
- Do you use a computer anywhere else e.g. at someone else's house?
- What things are difficult to find out about?
- What are the differences between home and school if you are looking for information?
- How will high school be different from primary school?
- How will high school tasks be different from primary school tasks?

Appendix 10: Traffic Light Evaluation Form P7 Poster Task

Name _____

Jobs during World War 2 - Self Evaluation

Working in groups - please traffic light how well you think your group managed in the following areas

Took turns to speak quietly

Kept to the time given

Kept to the task

Listened to each other and thought about what others are saying

Got everyone's ideas



Made decisions

Spoke to each other in a friendly manner

In the box below write down 4 pieces of information you found about the job you were researching.

* * * *

Appendix 11: KWL Grid

<table border="1"><tr><td style="text-align: center;">World War 2</td></tr></table>			World War 2
World War 2			
K WHAT I KNOW ALREADY 	W WHAT I WOULD LIKE TO KNOW	L WHAT I HAVE LEARNED 	

Appendix 12: Consent Form for School Staff

Declaration of Participation (Teachers/Headteacher/Classroom Assistants)

I understand that:

1. The purpose of the study to establish how children search for and use information for given tasks while in the classroom.
2. I will be asked to complete a questionnaire about my experience and opinions regarding children's use of information sources to complete tasks in the classroom. I may also be asked to take part in a short interview later on in the study.
3. No personal judgements will be made on data collected.
4. I can terminate my participation at any time without giving a reason and without any of my rights being affected.
5. I am under no obligation to respond to all aspects of the procedure: for example, I can refrain from answering any questionnaire or interview question(s) about which I feel uncomfortable.
6. All information I give will be treated with the utmost confidentiality and their anonymity will be respected at all times.
7. Data collected during the study will be statistically analysed and presented in various forms, including quotations.
8. The data may be published in a Thesis, research papers or presentation.
9. The data will be stored both on paper and electronically and I give permission for the investigator to maintain records of the study should a follow-up to the study be conducted in the future, or a further study be undertaken.
10. Ethical consent has been obtained/is being sought.

Date: _____

Name: _____

Signed: _____

Appendix 13: Letter and Consent Form for Parents

Dear Parent/Guardian

My name is Emma Nicol. I am a researcher in the Department of Computer and Information Sciences at the University of Strathclyde. For the past few years I have been investigating how children search for and use information. I would very much like to involve your child in my study, observing him/her as he/she carries out his/her everyday information tasks in the classroom. I will be in Miss X's class for a couple of hours each week from the beginning of February until the Easter break. During the study I would like to conduct a series of short group interviews with your child so that they can tell me about their experience of completing the tasks. At a later time I may also ask for your participation in a short interview about your child's information seeking preferences. The study has been approved both by Glasgow City Council and by a university ethics committee. The form attached explains more of what is involved. I would be very grateful if you would complete and return the form to XXXX Primary at your earliest convenience.

Many thanks

Emma Nicol
University of Strathclyde

Declaration of Participation (Parent/guardian of child)

I understand that:

1. The purpose of the study is to establish how children search for and use information for given tasks while in the classroom.
2. My child will be observed as he/she completes a task that requires him/her to look for and use information e.g. from a book from the library corner, from the web, from a teacher or classroom assistant. Video and audio taping of the information-seeking sessions will be made and small discussion groups will be conducted involving the child to discuss his/her experiences and feelings in carrying out the task. I may be asked to participate in a short interview later on in the study once the observations of the children have been completed.
3. I can terminate my child's participation at any time without giving a reason and without any of my rights being affected.

4. My child and I are under no obligation to respond to all aspects of the procedure: for example we can refrain from answering any questions about which we feel uncomfortable.
5. All information provided by me or my child will be treated with the utmost confidentiality and our anonymity will be respected at all times.
6. Data collected during the study will be statistically analysed and presented in various forms, including quotations.
7. The data may be published in a Thesis, research papers or presentation. It should be emphasised that all data used in publications will be completely anonymised such that no individual will be identifiable from the descriptions made.
8. None of the data collected will be used for any purpose other than that already stated in this document.
9. The data will be stored both on paper and electronically and I give permission for the investigator to maintain records of the study should a follow-up to the study be conducted in the future, or a further study be undertaken. Any audio or video recordings are for use by the investigator only and all recordings will be securely stored, and will be destroyed within 6 months of the study's completion.
10. Ethical consent has been obtained.

Date: _____

Child's name _____

Parent's name _____

Signed: _____

Appendix 14: Application to Glasgow City Council Education Department

Section A - Application to Undertake Research

Category 1

Institutional Externally Funded

Application for undertaking research in Glasgow City Council, Education Services

1 Name of the incorporated body you represent (ie University, College etc)

Department of Computer and Information Sciences, University of Strathclyde, Glasgow.

2 Names and designations of the applicants (the first name entered should be the coordinator/director/head of the project)

Emma Nicol MSc - doctoral research student Supervised by Dr Monica Landoni monica@unisi.ch Professor Ian Ruthven ian.ruthven@cis.strath.ac.uk

3 Sources and total amount of funding available or applied for (delete as appropriate) N/A

4 Anticipated or actual amount of funding (delete as appropriate), method and frequency of payments (eg 3 equal annual payments of £X) N/A

5 Anticipated timescale of project 6 months Jan-July

6 Base or location of project (this will normally be the address for correspondence) Room X, Livingstone Tower, Richmond Street, University of Strathclyde, G1 1XH emma.nicol@cis.strath.ac.uk 0141 548 XXXX Mob: 079XX XXX XXXX

7 Title of Research Project An investigation of the information seeking behaviour of children in the primary classroom.

8 Abstract: (in not more than 500 words give a synopsis of what the project is about, {including any hypotheses} and how you intend to conduct it, including methodology. You may attach a typewritten abstract in this form; if so enter Abstract Attached in the space below).

The study proposed is a task-based study of children's information seeking behaviour as it relates to school activities. Children involved in the study will be observed as they carry out information seeking tasks in their usual setting i.e. in the classroom, with access to all of the information channels that would normally be available to them. The study will be conducted with P7 (Mrs XXXX class). Subject to the successful completion of the current study, permission for a further study with P5 and P3 will be applied for later in the term. Study hypothesis: The information seeking behaviour of children is influenced by a number of factors. Research Questions: What factors are of greatest influence on children's information behaviour? How do children approach similar information seeking tasks at various stages of development? The study is planned to take place from (week 1) until just after the Easter break. Data collection methods and timings: Staff questionnaire/interview for teaching staff employed in the school. (week 2) Observations of P7 children as they carry out their information seeking tasks. (weeks 1-8). Audio and videocording of observation sessions (weeks 2-8) P7 children to complete short diary entries about their activities. (weeks 2-8). Group interviews with children. (week 8). Interviews with headteacher and the teaching staff of each class. (after Easter break) Group interviews with parents of the children involved in the study. (after Easter break).

9 Form of project output (Cite the major form/s of output anticipated eg research report[s]; curriculum material; journal articles; book etc. In the case of reports cite primary destination[s] of such documentation).

PhD thesis. Journal and conference articles.

10 Access and facilities being requested from Glasgow City Council, Education Services (List the type of data required, the names of individual establishments if known and the category of personnel eg staff; pupils; students; parents etc with an estimate of numbers, if relevant).

The study will be based in XXXXXX Primary School, XXXXXX St, XXXXXX, Glasgow, GXX XXX

Access is requested: To pupils of P7 (Mrs XXX class). All teaching staff and classroom assistants in the school (for the completion of a short questionnaire or interviews). Access to parents of the P7 children involved in study for the purpose of a structured group interview.

11 Any other information (include below any further information you believe relevant to this application).

I hope that this application will be strengthened by my track record of research with children and educational professionals in a variety of contexts. I began my career as a researcher with the WEBKIT project (2002) investigating tangible interfaces to the web for children. In that capacity I designed and carried out a number of user studies with pupils and staff at schools in the Warwick area. In 2006 I designed and conducted an evaluation of Strathclyde University's Laptop Initiative, interviewing student teachers, school staff and teacher trainers. In recent years I have been involved with research in the domain of the use of digital simulations in Higher Education. Since 2005 I have contributed to numerous conference papers and book chapters in the fields of Human Computer Interaction, Information Retrieval and Education. Initial meetings and other correspondence with XXXXXX Primary, in particular with parent council members, the headteacher and senior teacher of the upper school, have been extremely encouraging and the staff have been very welcoming and supportive of the study taking place there.

12 Declaration I certify that the information given in this section is to the best of my knowledge complete and accurate

Signature of Applicant:

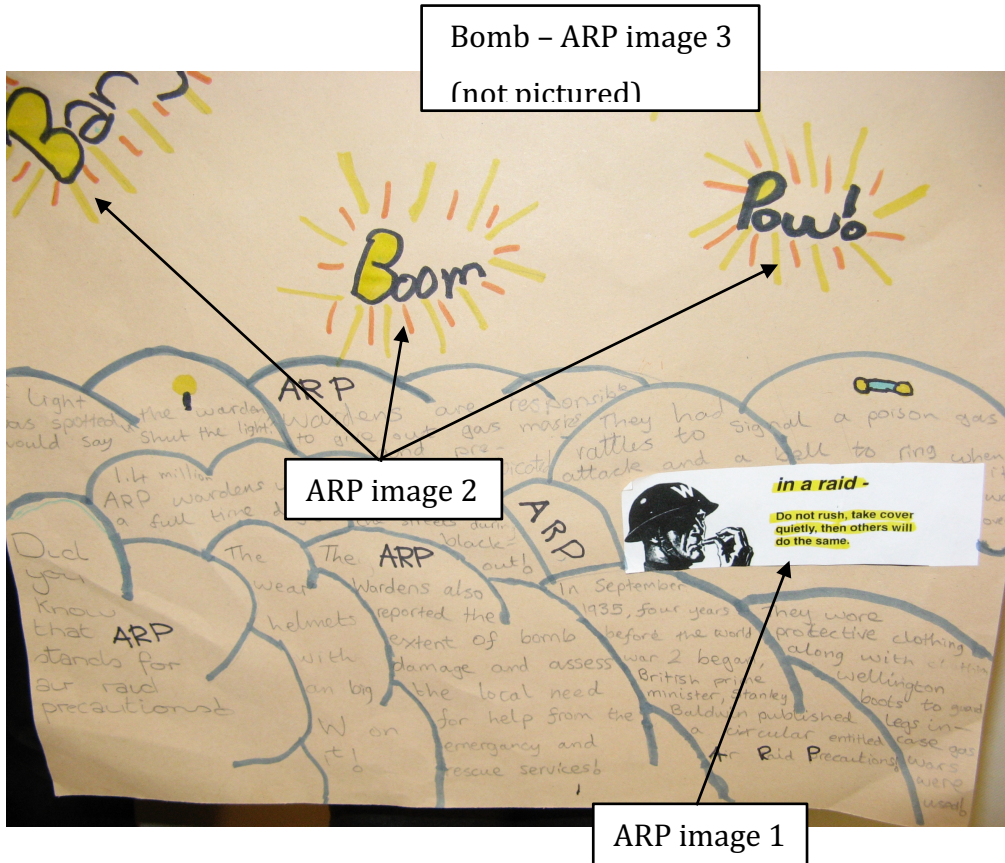
Date:

Signature and designation of staff member/agent authorised to contract on behalf of the institution

Date:

Appendix 15: Images: Poster Task

Group 1 ARP Warden



The poster features the title "Womans Land Army!" in large, colorful, hand-drawn letters at the top. Below the title is an illustration of a woman in a green shirt and red pants working in a field, with a callout box labeled "WLA image 1". The poster is divided into several sections with decorative borders:

- WLA title:** "Womans Land Army!"
- WLA image 1:** Illustration of a woman working in a field.
- WLA text 1:** "What is it?"

The government started the Womans Land Army when Britain was running short of food. They wanted to increase the amount of food but to do this they needed more help on farms so they advertised to encourage more people to join the womans land army.
- WLA text 2:** "What kinds of jobs did the land army do?"

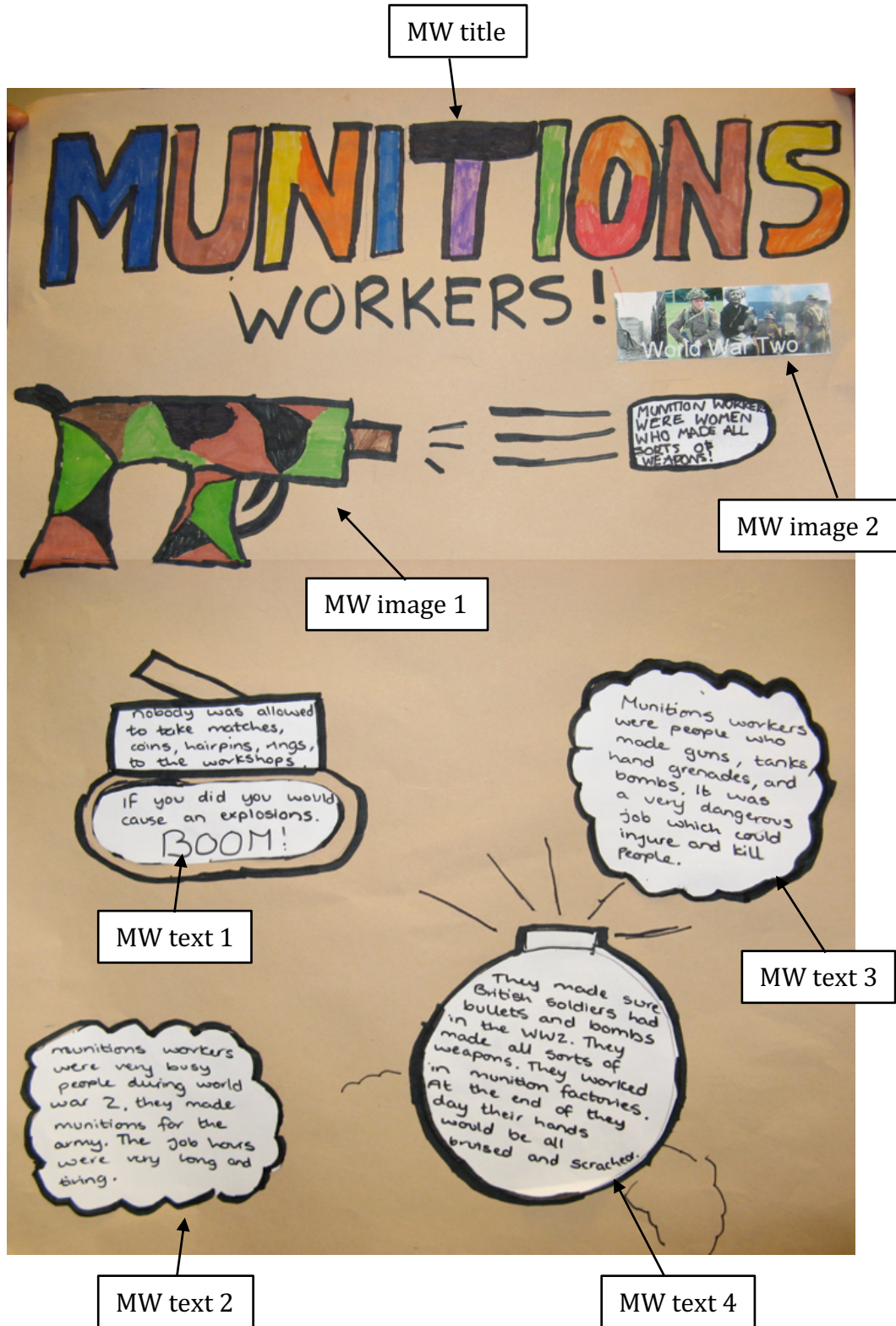
The women in the land army looked after animals, ploughed up potatoes, harvested crops, killed rats, dug for hours a week and 50 hrs a week in the summer. The women earned £1. 85 for a working week with a minimum working hours. In 1944 the wages were increased to £2. 85.
- WLA text 3:** "Memorial to war."

the memorial stands in whitehall, 200 yards from cenatoph. the 22 ft high memorial depicts the uniform (working clothes) worn by women during the war.
- WLA text 4:** "Even more!..."

The womans land army was a british civilian organisation created during the 1st and 2nd World War. Women who worked in the Womans land army were called the land girls. Womens land army was set up in June 1939.

The End.

Group 3 Munitions Workers



MW title



MW image 1

MW image 2

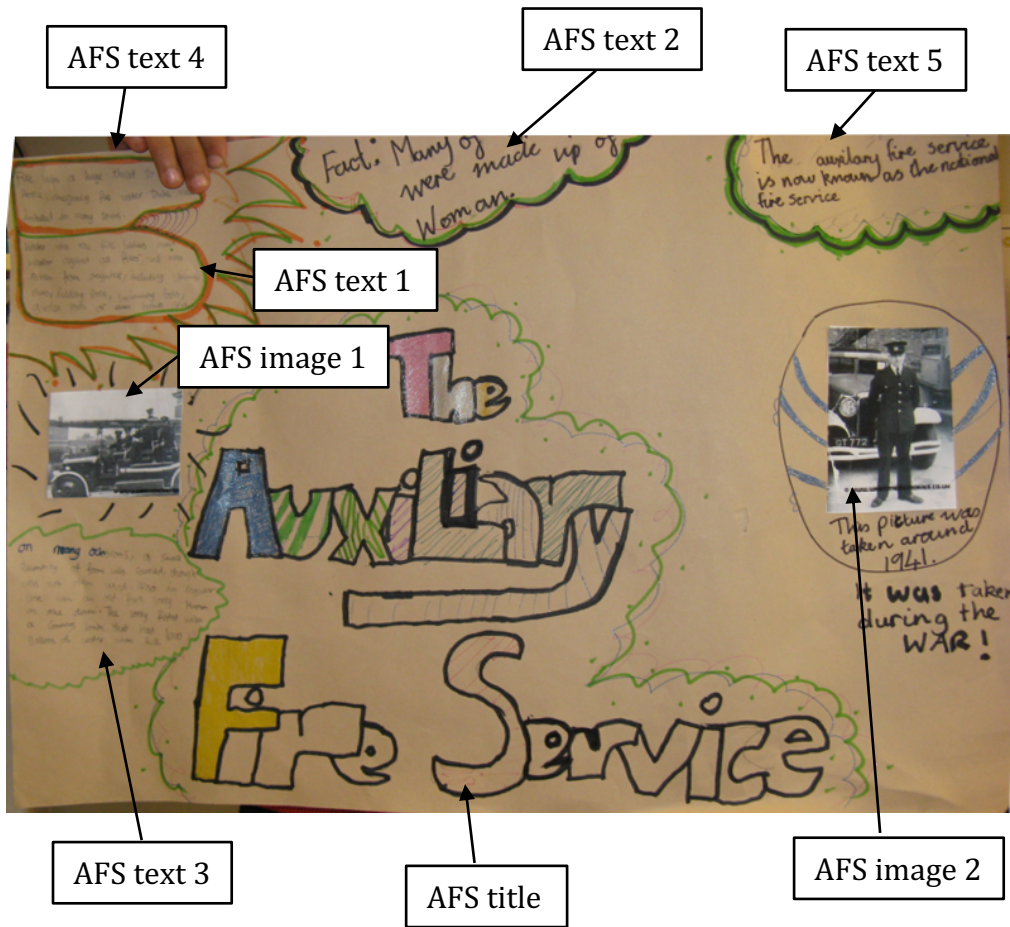
MW text 1

MW text 3

MW text 2

MW text 4

Group 5 Auxiliary Fire Service




Group 6 Home Guard

HG title

The Home Guard

HG image 1




HG text 1

In January 1937 the government advertised volunteer for warden service on radio


HG text 2

The Home Guard were volunteers who defended the thousand miles of British coastline in the event of a invasion by Germany. They were originally called the 10 Defence Volunteers

HG image 2




HG image 3



HG text 4

The Home Guard defended key targets like factories, ex stores, beaches and sea fronts. At night they patrolled fields which the enemy gliders or paratroops might land. No one them to beat well-trained German soldiers. Their job was to them down until the army arrived.

HG image 4




HG text 6

Why was the Home Guard formed?


On Friday 10 May 1940, the Germans had started their attack on Belgium and the Netherlands using soldiers dropped by paratroops in mainland Europe were pushed back to the ports. Many people feared that the Germans would soon reach London.

HG text 5

Dad's Army is a British sitcom about the Home Guard in World War II, written by Jimmy Perry and David Croft and first shown on BBC television between 1968 and 1977. Below is a scene from the sitcom.




HG image 6



HG image 7

The Badge of the National Home Guard. A volunteer was formed to defend the homeland while the regular army is fighting elsewhere.

HG image 5



HG text 4

NB The files containing Group 4's Billeting Officer poster became corrupted and are no longer viewable.

Appendix 16: Interview Schedule: Teacher Interview 1

- How well do you think the children worked together in their groups?
- Were any groups working particularly well/badly on their tasks?
 - Did you see any differences in this while they were using a computer?
- Did you think that the task (explore a few tasks) was difficult before you gave it to them?
- What did you notice about the way they worked (explore a few tasks): did they work individually, in pairs?
 - Did you expect that to be the case?
- Do you get much of a sense of who does have Internet at home?
- How happy are you with the work that the groups produced?
 - Did you notice any difference with task involving the use of technology?
- Which group task was most successful over the last 8 weeks?
 - Did you expect that to be the case?
- How happy are you with the work that individuals produced?
- How happy are you with children's use of paper and electronic resources in the tasks?
- How well does the work produced meet the success criteria for the tasks?
 - Were the children aware of these criteria? (Do they bear these in mind?)
- Tell me about some of the information they found out?
- How good has the quality of the information been that the children have found?
- Which resources available in class for this topic did you think were best?

Appendix 17: Interview Schedule: Teacher Interview 2

- What were the main skills that you wanted the children to gain from doing the tasks (explore question in relation to a few tasks in turn)?
- How well do you think they performed in the tasks (explore question in relation to a few tasks in turn)?
- What did you want them to do in the Poster Task?
- Have they done a task like the Poster Task before?
- How well do you think they did in the Poster Task?
- What did you hope to achieve with the Clydebank Blitz homework task?
- How well do you think they engaged with the homework task?
- How did the home hobby task differ from the Clydebank homework task?
- How much do you think the class liked the WW2 topic overall?
- How much freedom would you say you had in teaching this topic?
- Did you observe any difference between level of performance and engagement with tasks between boys and girls?
- Are there any other differences that you have noticed between the preferences of boys and girls in their learning?
- Children mentioned unfairness regarding computer access. What is your response to that?
- Some boys have mentioned that they are not interested in reading at all. What is your response to that?
- Boys have said that there are couple of other boys in the class, whom they regard as experts on particular topics. Have you come across this?
- Have you enjoyed doing this topic?
- How do you think children's skills changed over the course of the topic?
- Have the children made any comments about my being here?
- Do you think that my being here had an influence on your behaviour or the behaviour of the children?

Appendix 18: Leisure Task Detailed Survey Results

Demographics

28 children (14f, 14m) responded.

Q0a All of the children who responded provided their names. These have not been used in the reporting of the data.

Q0b All children answered that they were aged between 11 and 12 years old at the time of completing the survey.

Q0c All of the children responding reported that they were members of the same Primary 7 class referred to as P7 throughout this thesis.

Survey Answers

For **Q1 My favourite TV programmes** children were presented with a box as follows:


<p>My favourite tv programmes:</p> 

Figure 4: Answer box for Q1 My favourite TV programmes

27/28 (96%) responded listing their favourite TV programmes, with only one child of the 28 (1f) saying she didn't watch television. A total of 72 (36f, 36m) preferences were expressed. 21/28 (71%) listed more than one programme, with 12 (43%) listing 3 or more programmes. 41 different programmes were mentioned. Overall, boys listed 26 different programmes, girls 23. Of the 41 different programmes listed, only 7 of them were mentioned by both boys and girls. The table below shows the spread of results ordered from most to least popular by Total Frequency:

Programme Name	Total Frequency	Girl Frequency	Boy Frequency
Simpsons	5	1	4
Total Wipeout	5	4	1
X-Factor	5	4	1
Britain's Got talent	5	3	2
Horrid Henry	5	2	3
Starstruck	4	3	1
Suite life on Deck	3	1	2
Football	3	0	3
Wizards of Waverley Place	2	2	0
Eastenders	2	2	0
You've Been framed	2	1	1
Match of the Day	2	0	2
Horrible Histories	2	0	2
Deadly 60	1	1	0
Homeward Bound	1	1	0
MTV awards	1	1	0
Pop Party	1	1	0
Junior Masterchef	1	1	0
My parents are aliens	1	1	0
High School Musical	1	1	0
Calamity Jane	1	1	0
Two of a kind	1	1	0
H2O	1	1	0
Jungle Bun	1	1	0
Top Gear	1	0	1
Gadget Show	1	0	1
Young Dracula	1	0	1
Football's next star	1	0	1
News	1	0	1
Sunny of a chance	1	0	1
Brian O'Brian	1	0	1
Big time Rush	1	0	1
Music	1	1	0
Big Brother	1	1	0
Family Guy	1	0	1
Phineas and Ferb	1	0	1

SpongeBob	1	0	1
Friends	1	0	1
Doctor Who	1	0	1
Supernanny US	1	0	1
Totals	72	36	36

Table 4: Q1 My Favourite TV programmes

Results were then grouped by genre, resulting in the table below.

Programme Genre	Total Frequency	Girl Frequency	Boy Frequency
Music/Talent/Reality	24	19	5
Sitcoms	13	7	6
Cartoons	12	2	10
Factual (non-Sport)	9	1	8
Sport	5	0	5
Kids' Drama	3	1	2
Adult Drama	2	2	0
Films	2	2	0
Unidentified	2	2	0
Totals	72	36	36

Table.5: Q1 My Favourite TV programmes

Music/Talent/Reality came out on top overall with 24 preferences in this category with it being mentioned far more often by girls (19f) than by boys (5m). This categorisation was chosen as it was often difficult to separate out those programmes that were purely about music, those that were purely about talent etc. The next highest scoring category was Sitcoms with overall score of 13 (7f, 6m) i.e. split fairly evenly between girls and boys. The next highest category was Cartoons with overall score being 12 (2f, 10m), boys clearly being keener on this genre than girls. Factual (non-Sport) was next with 9 (1f, 8m) mentions. Next was Sport with 5 (5m). There were 3 mentions of Kids' drama (1f, 2m), 2 of Adult Drama (2f) and 2 of Films (2f). Of the 72 preferences

expressed, there were only 2 that I failed to identify or classify. Only 14/72 (19%) of choices were for Sport or Factual non-Sport programmes.

For **Q2 My favourite books** children were presented with a box as follows:

My favourite books:




Figure 5: Answer box for Q2 My favourite books

26/28(93%) (14f, 12m) responded listing their preferences. Only two children (2m) failed to write anything at all for this question. A total of 54 preferences were expressed with boys and girls listing the same total number of preferences at (27f, 27m). 32 different books were mentioned. Girls listed 20 different books with boys mentioning 16 different books, with an overlap of 5 books that both boys and girls picked. Most (19/28) 68% of children listed more than one book with 11/28 (39%) listing 3 or more books. The table below shows the spread of results ordered by most popular:

Book Title	Total Frequency	Girl Frequency	Boy Frequency
Harry Potter	6	2	4
Horrid Henry	5	1	4
Footballer Autobiographies	4	1	3
Twilight	3	3	0
Beast Quest	3	0	3
Pony Club Secrets	2	2	0
New Moon	2	2	0
Eclipse	2	2	0
Breaking Dawn	2	2	0

Adventure	2	1	1
Lion Watch Wardrobe	2	1	1
Horror	2	0	2
Rescue Me	1	1	0
Mustang Mountain	1	1	0
Pony club Rivals	1	1	0
Miley Cyrus	1	1	0
Jacqueline Wilson Books	1	1	0
Pete Johnson books	1	1	0
Pippi Longstocking	1	1	0
Eragon	1	1	0
Indian in the Cupboard	1	1	0
Comics	1	0	1
Fire Mask	1	0	1
Kick Off	1	0	1
Shoot Out	1	0	1
Car Books	1	0	1
Football	1	0	1
Cricket	1	0	1
Justin Bieber	1	1	0
Comedy	1	0	1
Michael Jackson	1	0	1
Totals	54	27	27

Table 6: Q2 My Favourite Books

Taking the results by genre, 41 likes for Fiction books were listed (24f, 17m) with the remaining 13 likes (3f, 10m) being for Non-Fiction books. 24 (13f, 11m) children mentioned at least one Fiction title, 6 (2f, 4m) children named at least one Non-Fiction title.

The table below displays the results obtained broken down by genre.

	Book Genre	Total Frequency	Girl Frequency	Boy Frequency
Fiction	Fantasy/Adventure	27	15	12
	Comedy Fiction	6	1	5
	General Fiction	6	4	2
	Horse Fiction	4	4	0
Non-Fiction	Biography	3	1	2
	Football	3	0	3
	Pop Singers	3	2	1
	Cars	1	0	1
	Cricket	1	0	1
	Totals	54	27	27

Table 7: Q2 My Favourite Books by genre

The most popular genre was Fantasy/Adventure with 27 (15f, 12m) preferences for books in this category being reported. This was followed by Comedy Fiction with 6 (1f, 5m), and General Fiction with 6 (4f, 2m), Horse Fiction with 4 (4f), Biography with 3 (1f, 2m), Football with 3 (3m), Pop singers with 3 (2f, 1m) and Cars and Cricket with 1 each, both (1m).

For **Q3 My favourite games** children were presented with a box as follows:



Figure 6: Answer box for Q3 My favourite games

All 28 (100%) (14f, 14m) children responded listing their preferences. A total of 74 (43f, 31m) preferences were reported. 44 different categories of activity were reported with girls reporting a preference for 39 of these and boys for 20 of these categories. The overlap between the categories picked by both boys and

girls was 8. 28 (100%) of children named at least one game with 14 (8f, 6m) children naming 3 or more. The table below displays the results for this question.

Name of game	Total Frequency	Girl Frequency	Boy Frequency
Football	6	1	5
PSP	5	3	2
Wii	4	4	0
Connect 4	3	1	2
Chess	3	2	1
Monopoly	3	1	2
Pony friends	2	2	0
SIMS 3	2	2	0
Tig	2	2	0
Marbles	2	2	0
PlayStation	2	1	1
Ludo	2	2	0
Y8 games	2	1	1
Need for Speed	2	1	1
Fifa	2	0	2
Checkers	2	0	2
Sport	2	0	2
Modern Warfare	2	0	2
Grand Theft Auto	2	0	2
Nintendogs	1	1	0
Twister	1	1	0
Xbox	1	1	0
Hide and seek	1	1	0
DS	1	1	0
Cheat	1	1	0
Lego	1	1	0
Star Wars	1	1	0
Snakes and Ladders	1	1	0
Habbo	1	1	0
Migoland	1	1	0
Dodge ball	1	1	0
Piggy in the middle	1	1	0
Mariokart	1	1	0

Super Mario	1	1	0
Shark Rush	1	1	0
Netball	1	1	0
Badminton	1	1	0
Assassins Creed	1	0	1
Splinter Cell	1	0	1
Penny games	1	0	1
Call of Duty	1	0	1
Cluedo	1	0	1
Cricket	1	0	1
Totals	74	43	31

Table 8: Q3 My Favourite Games

Grouping these results by game type the following results were obtained:

Game type	Total Frequency	Girl Frequency	Boy Frequency
Computer Games	40	23	17
Board Games	17	9	8
Sport	10	4	6
Playground Games	6	6	0
Lego	1	1	0
Total	74	43	31

Table 9: Q3 My favourite games grouped by type

It can be seen from the table that the most common game type with both boys and girls was Computer games with and 40/74 (54%) of choices with girls tending to list more games of this type than boys did. Board Games and Sports were roughly equally popular responses from boys and girls whereas girls mentioned Playground Games 6 times where boys mentioned them not at all.

For Q4 What activities do you like doing in your spare time away from school? Try to name at least 2 things; children were presented with a box as follows:

What activities do you like doing in your spare time away from school? Try to name at least 2 things:

Figure 7: Answer box for Q4 What activities do you like doing in your spare time away from school?

28/28 (100%) of the children responded listing at least one preference. A total of 63 preferences were expressed (35f, 28m) in 20 categories with girls choosing 18 different activities and boys 9. There were 9 activities that were chosen by both boys and girls. Overall, a physical activity was mentioned 41 (23f, 18m) times with non-physical activities being chosen 22 (12f, 10m) times. The table below displays the results for this question.

	Spare Time Activity	Total Frequency	Girl Frequency	Boy Frequency	
Physical	Football	14	3	11	Total = 41 (23f, 18m)
	Swimming	9	6	3	
	Horse-riding	3	3	0	
	Cycling	3	3	0	
	Cricket	3	0	3	
	Playing in the park	3	2	1	
	Dancing	2	2	0	
	Running	1	1	0	
	Scooter	1	1	0	
	Badminton	1	1	0	
	Skipping	1	1	0	
Non-physical	Gaming	9	3	6	Total = 22 (12f, 10m)
	Internet (non-game)	4	3	1	
	Reading	2	2	0	
	Music	2	1	1	
	Youth club	2	0	2	
	Watching TV	1	1	0	
	Watching Movies	1	1	0	

	Writing	1	1	0	
	Total	63	35	28	

Table 10: Q4 What activities do you like doing in your spare time away from school?

The results have been presented in order of popularity within the Physical category and within the Non-physical category. The top answer was Football with 14 (3f, 11m) followed by a tie between Swimming with 9 (6f, 3m) and (computer) Gaming with 9 (3f, 6m) respectively. 3 (3f) mentioned Horse-riding, 3 Cycling (3f), 3 Cricket (3m), 3 Playing in the park (2f, 1m) 2 Dancing (2f), 2 Going to (youth) Clubs (2m), 2 Music (1f, 1m) and there was one mention each for Writing (1f) , Running (1f), Playing on a scooter (1f), Badminton (1f), Skipping (1f), watching TV (1f) and watching Movies (1f). Only two children mentioned Reading (2f), and 4 mentioned using the Internet for activities other than playing games (3f, 1m).

For Q5 **Have a look at the hobbies and interests below and tick the box that describes how you feel about each one. Tick one box only for each hobby,** children were presented with the following table (not actual size):

	Not at all interested ★	Slightly Interested ★★	Interested ★★★	Very interested ★★★★	Fascinated! ★★★★★
Football					
Rugby					
Cricket					
Horse-riding					
Swimming					
Ice-skating					
Skateboarding					
Cars /Formula 1					
Cycling					
Athletics					
Tennis					
Badminton					
Pets					
Wildlife/Nature					
Fashion					
Pop Music					
Celebrities					
Films					
TV Programmes					
Art and Craft					
Computer games					
Science & Technology					
Scouts / Guides /BB					
Religion					
Reading novels					

Figure 8: Answer grid for Q5 Have a look at the hobbies and interests below and tick the box that describes how you feel about each one. Tick one box only for each hobby

28/28 children (100%) responded, all completing the table of 25 categories of hobby in full with no missed answers. Each hobby/interest had to be indicated as either “Not at all interested”, “Slightly interested”, “Interested”, “Very interested” or “Fascinated”. The graph below shows the distribution of responses for all 28 respondents with hobbies/interests being displayed in the order (left to right) in which they appeared on the survey. A quick inspection of the graph reveals that Football, Pop Music, Films, Swimming and Computer Games were the hobbies attracting the highest number of responses in the Fascinated category with Rugby, Horse-riding, Skateboarding, Scots/Guides/Boys Brigade and Reading Novels attracting the biggest number of responses in the Not at all interested category. The graph below shows the results unweighted for each category.

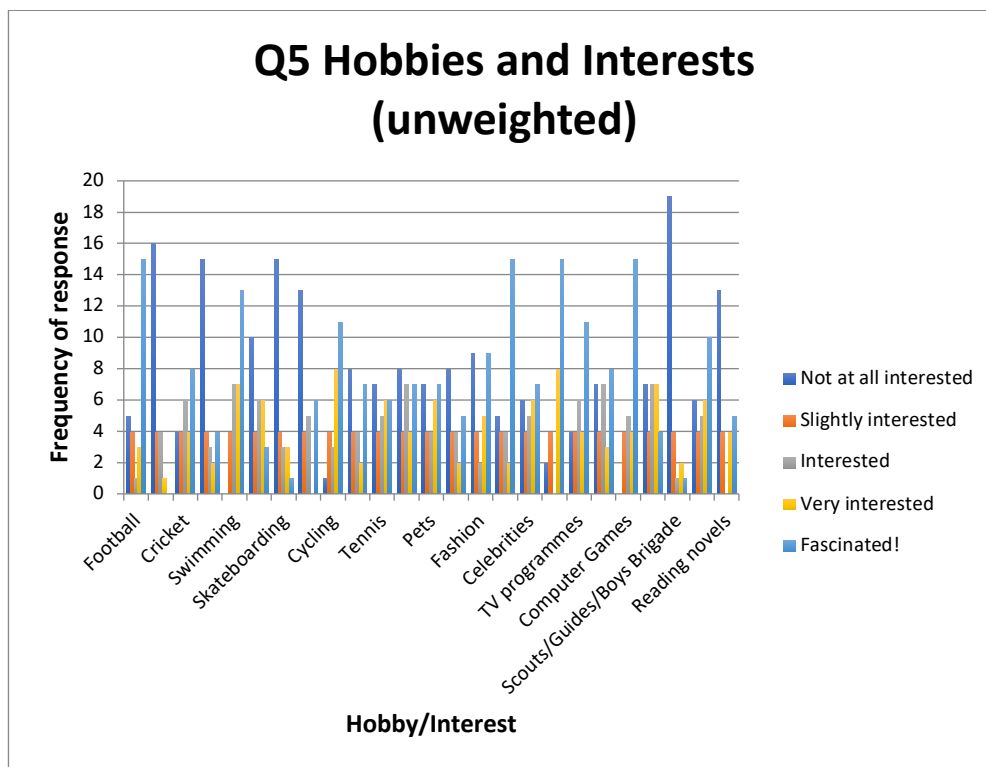


Figure 9: Q5 Have a look at the hobbies and interests below and tick the box that describes how you feel about each one (unweighted)

The graph below shows the results of weighting the question answers with **Not at all interested=0, Slightly interested=1, Interested=2, Very interested=3** and **Fascinated=4** and summing these for each category. The graph below shows the results following the use of this weighting scheme. NB The bars have been re-ordered to reflect the scores achieved by each hobby/interest in order of magnitude. Using this weighting, Swimming was the most popular hobby/interest and Rugby the least popular.

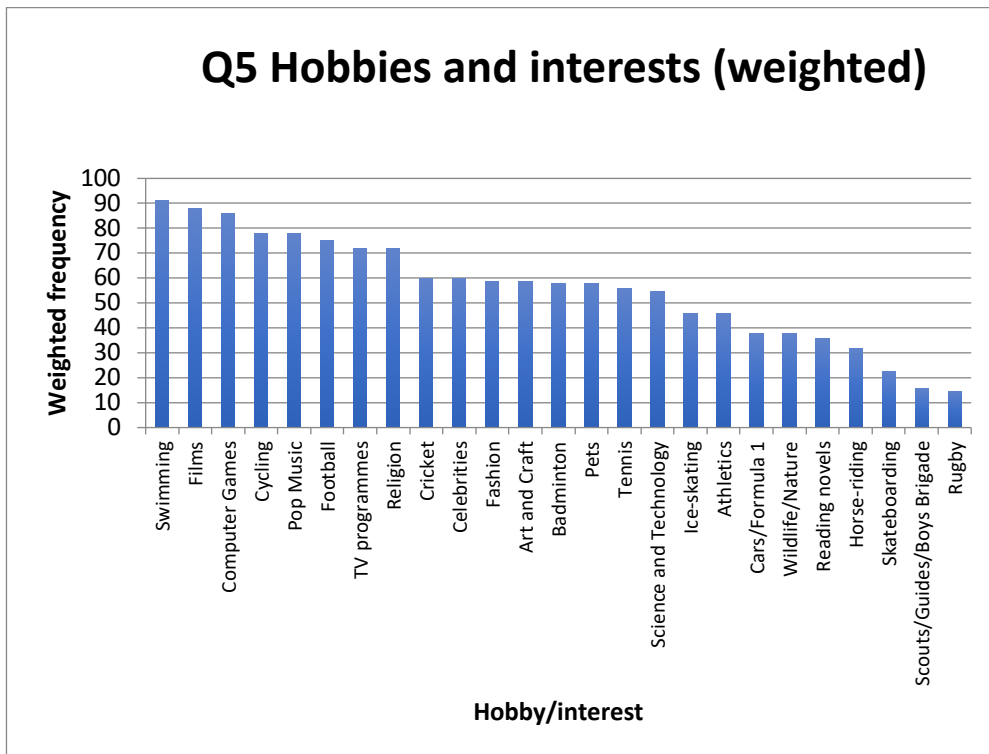


Figure 10: Q5 Have a look at the hobbies and interests below and tick the box that describes how you feel about each one (weighted)

The graph which follows shows the weighted findings for Q5 split for Boys only.

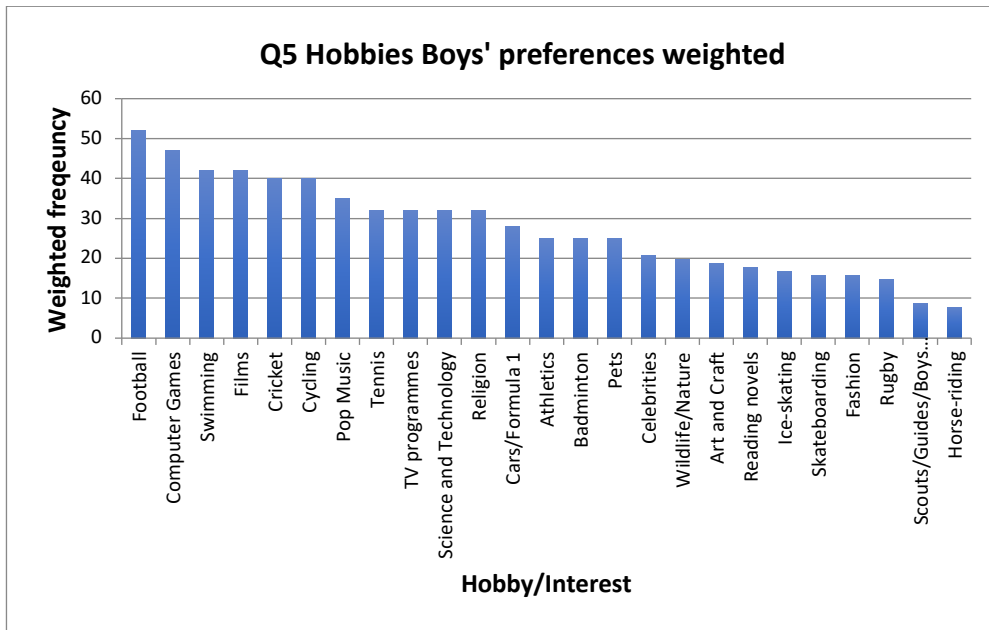


Figure 11: Q5 Hobbies (Boys' preferences, weighted)

The same analysis was performed for Girls only and the findings are presented in the graph below.

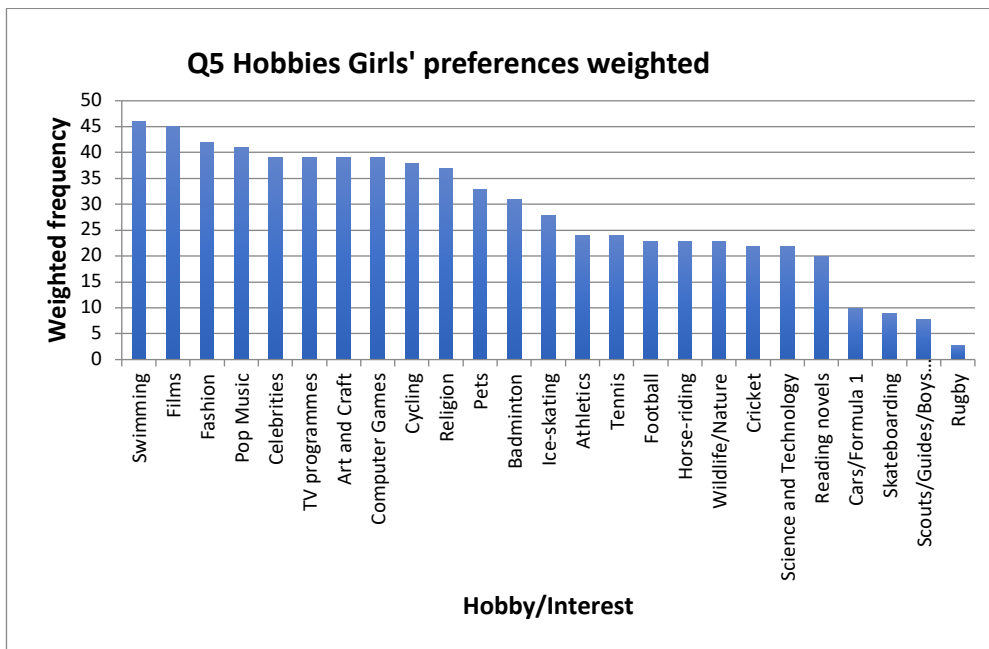


Figure 12: Q5 Hobbies (Girls' preferences weighted)

Graphing the girls' and boys' findings together as two series looks as follows:

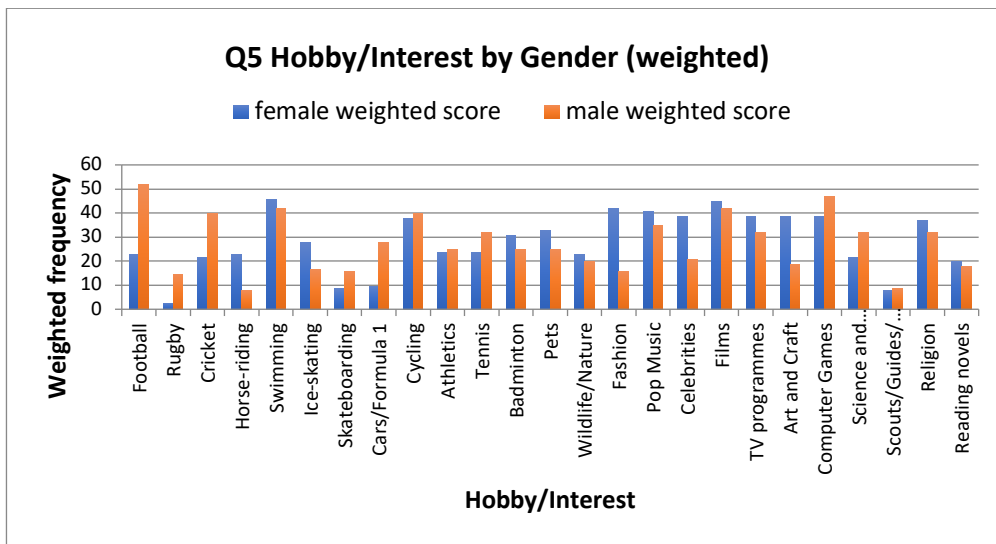


Figure 13: Q5 Hobbies (Girls vs. Boys, weighted)

Analysis using a cross-tabbing technique showed that while there was no statistically significant difference gender-wise in children’s preference for 21 of the 25 hobbies, there were 4 instances where there was a statistically significant difference. Boys were significantly more interested in Football ($p=0.01$). Girls showed significantly more interest in Wildlife/Nature ($p=0.04$), Fashion ($p=0.02$) and Art and Craft ($p=0.02$) than boys in this sample did.

Q6 Think about the hobbies and interests (no more than 5) that you said you were Very Interested in or Fascinated by. How do you find out about them? Tick as many as you like. For this question, children were asked to complete a grid as follows:

Write the hobby here ↓	Library books	Books at home	Websites	News Papers	Magazines /comics	Radio	TV	Friends	Family

Figure 14: Answer grid for Q6 Think about the hobbies and interests (no more than 5) that you said you were Very Interested in or Fascinated by. How do you find out about them? Tick as many as you like

28/28 (100%) of the children answered this question by giving an answer for at least one of the hobbies they had chosen in the Fascinated or Very Interested categories in Q5. One (1m) of children wrote about one hobby only, none of the children wrote about a total of 2 hobbies, 4 (2f, 2m) children wrote about 3 hobbies, 2 (2f) children wrote about 4 hobbies and 21 (10f, 11m) children wrote about five hobbies. A quick inspection revealed that children had adhered to the task as set and all had indeed chosen to report on hobbies that they had marked as either being in the Fascinated! or Very Interested in category in the previous question, Q5.

The table below shows how many mentions there were for each of the information sources in relation to each of the hobbies (NB children were allowed to choose multiple information sources for each of the hobbies they chose to answer about).

	Football	Rugby	Cricket	Horse-riding	Swimming	Ice-skating	Skateboarding	Cars/Formula 1	Cycling	Athletics	Tennis	Badminton	Pets	Wildlife/Nature	Fashion	Pop Music	Celebrities	Films	TV programmes	Art and Craft	Computer Games	Science and Technology	Scouts/Guides/BB	Religion	Reading Novels
Library Books	2	1	3	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	4	1	1	0	0	3
Books at home	0	0	0	1	1	1	1	1	2	0	0	0	1	0	0	0	0	0	1	2	1	1	0	0	3
Websites	8	0	4	2	5	2	1	1	1	0	3	1	3	0	1	5	0	2	1	3	7	1	0	1	3
Newspapers	6	0	4	0	0	0	0	0	1	1	2	0	1	0	0	2	0	1	2	1	1	0	0	0	1
Magazines/Comics	4	0	2	3	1	0	2	1	1	1	0	0	2	0	3	3	1	1	0	4	3	1	0	0	1
Radio	2	0	1	0	1	0	0	0	0	0	0	0	0	0	0	6	0	0	1	0	0	0	0	1	0
TV	8	0	4	2	3	0	2	2	1	1	4	1	2	0	2	8	2	6	2	5	3	1	0	0	0
Friends	12	0	4	2	10	3	1	1	3	1	2	4	0	0	1	4	0	0	1	4	4	1	0	0	0
Family	5	0	4	0	11	3	2	1	3	0	2	0	4	0	2	3	0	0	1	3	2	1	0	1	0
Totals	47	1	26	10	32	9	10	8	12	4	13	7	14	0	9	31	3	10	9	26	22	7	0	3	11

Table 11: Q6 How do you find out about the hobbies you marked as Very Interested or Fascinated?

It can be seen from the table above that the numbers for each information source/hobby combination are generally very low therefore performing an analysis by gender on this data would seem to be of limited use and meaning. However, the gender split will be returned to later in this section as overall preferences for information sources i.e. independent of topic are discussed.

The table below shows each information source along with, in the middle column, the total number of mentions each source attracted. The right hand column details the number of topics (out of the 25 possible) for which each information source was mentioned. The table is ordered according to Total Frequency, highest to lowest.

Hobby	Total frequency	Number of topics mentioned in
TV	59	19
Friends	58	17
Websites	55	20
Family	48	16
Magazines/Comics	34	17
Newspapers	23	12
Library Books	19	11
Books at home	16	12
Radio	12	6
Totals	324	130

Table 12: Q6 How do you find out about the hobbies you marked as Very Interested or Fascinated (totals)

We can see from the middle column of the above table that the most commonly mentioned method was TV (59) followed by Friends (58), Websites (55) and Family (48). The other methods are pretty far behind though Magazines/Comics attracted 34 overall and all of the methods have at least 12 mentions.

Looking at the right hand column, Websites were mentioned in relation to 20/25 topics, TV in relation to 19/25 topics, Friends in relation to 17/25 topics, with a similar score for Magazines/Comics (17/25) and Family being mentioned in relation to 16/25 possible topics with other answers attracting lower scores but each source type nonetheless attracting at least 6 answers.

Using a cross-tabbing technique an analysis was made of whether the information source preferences for each hobby were valued by gender in a statistically significant way. There were only two hobbies for which this was the

case. For Football ($p=0.00$) and Rugby ($p=0.00$) girls appeared to differ significantly from boys in how they found out about these topics, though this result could simply have arisen due to the disparity in volume between the number of boys who declared an interest in these topics versus the number of girls who did so e.g. none of the girls chose Rugby as something they were very interested and this result is likely therefore to be unrelated to the preference of information source.

For **Q7 What are your favourite ways of finding out about your hobbies and why?** Children were presented with the following:

What are your favourite ways of finding out about your hobbies and why?

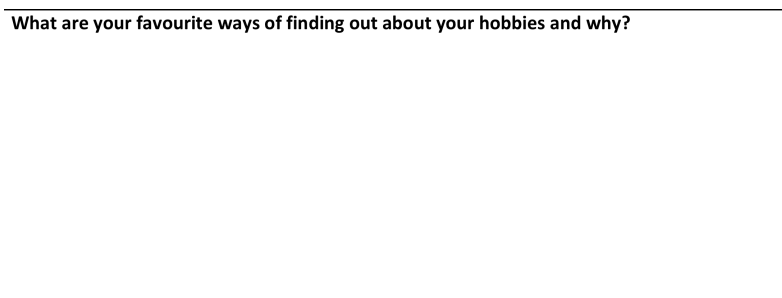


Figure 15: Answer box for Q7 What are your favourite ways of finding out about your hobbies and why?

28/28 (100%) of the children answered this question though not all answered both parts. 28/28 (100%) gave answers that listed their favourite ways of finding out about their hobbies but only 22/28 (79%) gave reasons why these were their favourite ways. The answers given to this question were free text and while categories very quickly emerged without any real need for sophisticated coding, a decision was taken to combine any answers that mentioned “websites”, “computer” or “Internet” under the common heading “Internet”.

The table below shows the categories of information source that emerged along with the frequency of answers that were in that category. The categories are ordered from left to right in order of magnitude.

	INTERNET	FRIENDS	TV	FAMILY	MAGAZINES/ NEWSPAPERS	BOOKS
Total	18	8	8	4	3	2
Girl	9	4	3	2	2	1
Boy	9	4	5	2	1	1

Table 13: What are your favourite ways of finding out about your hobbies?

It can be seen from the table that the Internet was the most popular way reported overall and also for both Girls and Boys, with Friends and TV also featuring as popular ways to find out about hobbies. There was no statistically significant difference between the choices of girls and boys for this question. The graph below shows the frequency of each information source over the total sample of children.

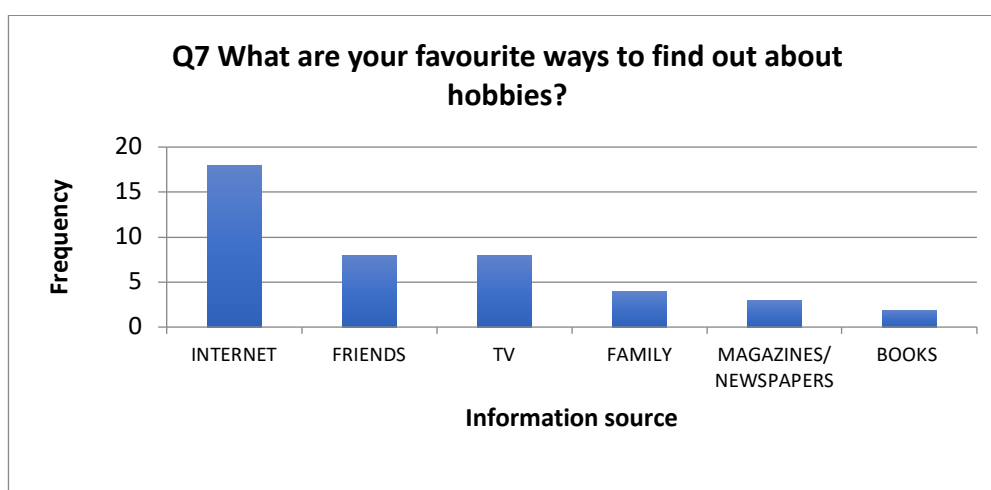


Figure 16: Q7 What are your favourite ways of finding out about your hobbies?

The graph below shows the frequency with which each information source was reported by the children when split by gender.

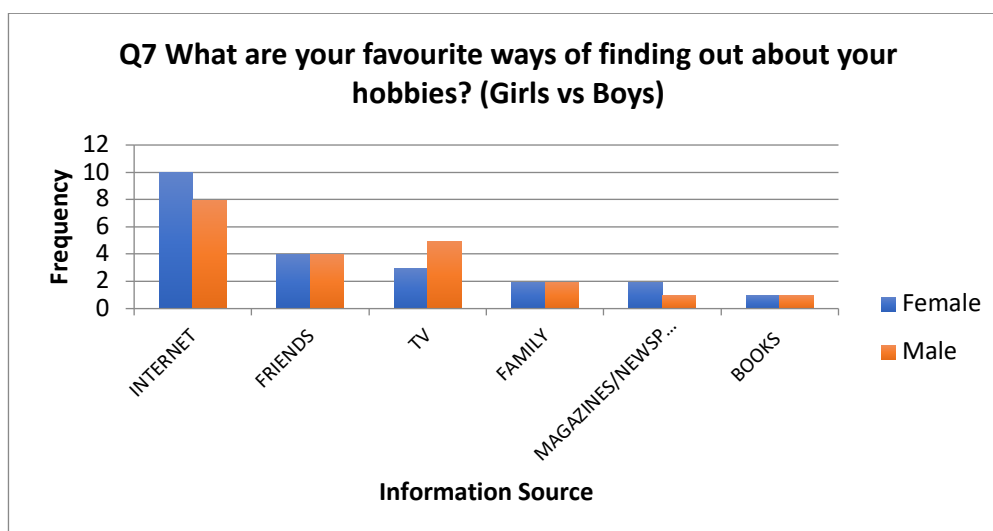


Figure 17: Q7 What are your favourite ways for finding out about your hobbies (Girls vs. Boys)?

As previously discussed, not all children gave reasons as to why they had picked particular answers regarding their preferred methods for finding out about their hobbies. The table below shows how many expressed a reason as to why for each of the categories that emerged along with the number of instances of this category being mentioned by a child. These findings are also reported by gender.

	WHY INTERNET?	WHY TV?	WHY FRIENDS?	WHY FAMILY?	WHY MAGAZINES/NEWSPAPERS?	WHY BOOKS?
Total	15	5	4	2	2	1
Girl	8	2	3	2	1	1
Boy	7	3	1	0	1	0

Table 14: Q7 What are your favourite ways for finding out about your hobbies (number of children who gave reasons for answer, Girls vs. Boys)

It can be seen from the table that girls and boys seemed equally comfortable in giving reasons for their use of each of these information sources.

The table below shows the frequency with which sources were picked by Girls along with the number of times a reason was given for picking the source.

Girl	INTERNET	FRIENDS	TV	FAMILY	MAGAZINES/ NEWSPAPERS	BOOKS
Frequency of Hobby chosen	9	4	3	2	2	1
Frequency of Reason being given	8	3	2	2	1	1

Table 15: What are your favourite ways for finding out about your hobbies (vs. number of children who gave reasons for answer, Girls)

It can be seen that for the Girls, the number of reasons given for picking each information source is entirely in line with the number of times each information source was mentioned. The graph below also shows this clearly.

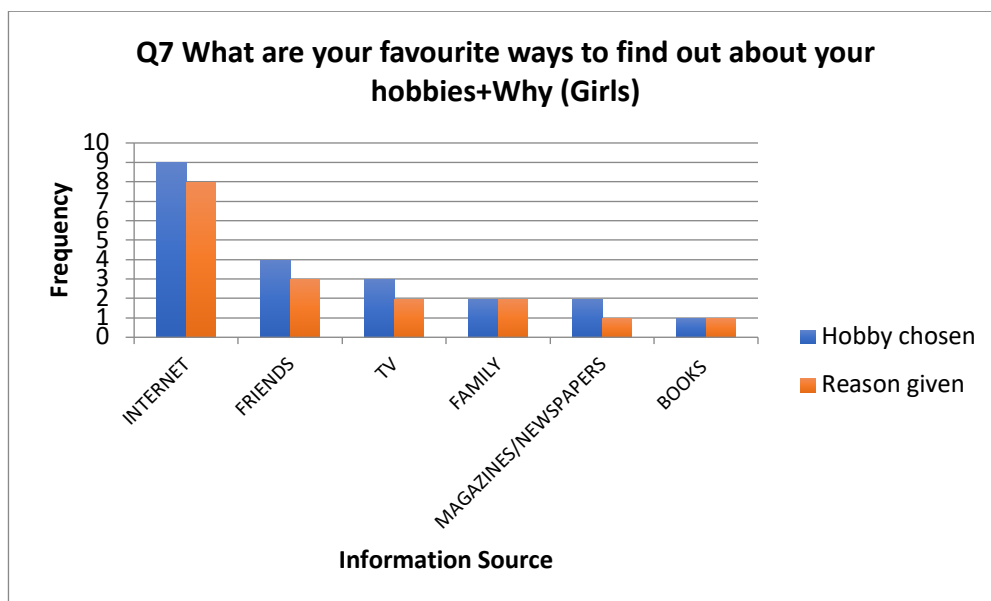


Figure 18: Q7 What are your favourite ways for finding out about your hobbies (vs. number of children who gave reasons for answer, Girls)

Performing a similar analysis for boys produced a table as follows:

Boy	INTERNET	FRIENDS	TV	FAMILY	MAGAZINES/ NEWSPAPERS	BOOKS
Hobby chosen	9	4	5	2	1	1
Reason given	7	1	3	0	1	0

Table 16: Q7 What are your favourite ways for finding out about your hobbies (vs. number of children who gave reasons for answer, Boys)

It can be seen that for the Boys, the number of reasons given for picking each information source is entirely in line with the number of times each information source was mentioned. The graph below also shows this clearly.

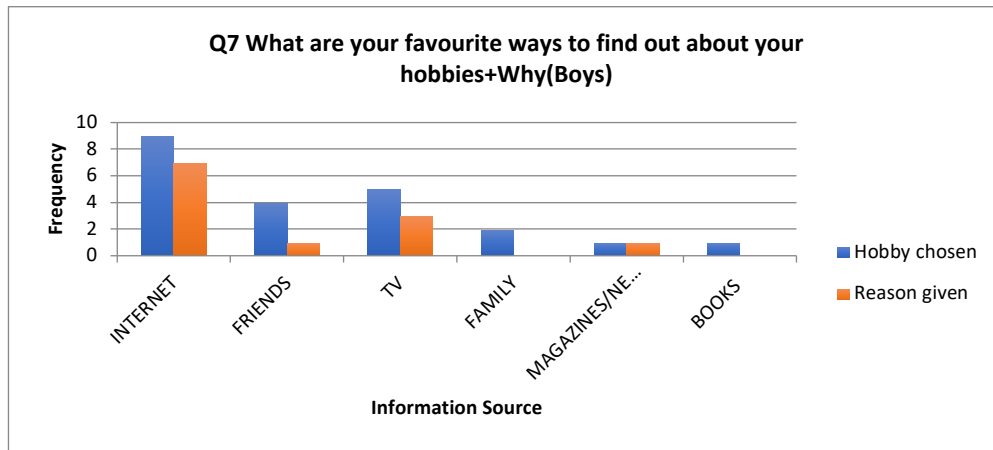


Figure 19: Q7 What are your favourite ways for finding out about your hobbies (vs. number of children who gave reasons for answer, Boys)

The table below details the reasons that children gave for choosing each source. To maintain the richness of these responses, full quotes are included.

	WHY INTERNET	WHY FRIENDS	WHY FAMILY	WHY TV	WHY BOOKS	WHY MAGAZINES/ NEWSPAPERS
Girls	lots of info fast and easy because it is easy because then i know it's true it's fun rather than reading a long book if i want to go to swimming tennis and badminton because you type in a question and an answer always comes up It is very easy to find info	cos it's easier and i like when they tell me new things because they know the most about them because sometimes my friends know about it	because they know the most about them sometimes my family knows	because they (also) know the most about them always talks about celebs & pop music & celeb gossip	because you can read more	they talk about celeb gossip
Boys	I like using it because it is quick and easy and has lots of information because it is easy and simple Instead of looking in a book you can just search for it because it is a fast way of finding out about things because you get to listen and play it (music) because it helps you because you just search for anything and it comes up because it is more efficient and easier	because it is easier		because it shows you what you are doing because it's cool what they say because you see new (football) players		because it gives you more information

Table 17: Q7 Reasons given for methods for finding out about hobbies

It can be seen from the table above that:

- 6 children (3f, 3m) say they like using the Internet to find out about their hobbies because it is easy.
- 4 children (1f, 3m) describe the Internet as fast/quick/efficient.
- 2 children (1f, 1m) say that the Internet will always find you something.
- 1 child (1f) talks about the Internet being good to find information about hobbies with because then she knows it's true.
- 1 child (1f) compares the Internet to a book and says it is more fun.
- 2 children (1f, 1m) thought that asking Friends was "easier".
- 2 children (2f) pointed to their Friends' knowledge being the reason they'd ask them about their favourite hobbies.
- 2 children (2f) said that they'd ask Family due to their (the families') knowledge about the topics.
- None of the boys gave reasons for using Family as an information source for hobbies.
- 2 children (2m) indicated that the ability to see things happening was the reason for using TV as an information source
- 1 child (1m) found TV "cool".
- 2 children (2f) thought TV "knew" the most about the topics with one of these specifically mentioning information about celebs and gossip.
- 1 child (1f) had chosen Books as a source because "you can read more".
- No boys wrote anything in relation to their reasons for choosing Books.
- 1 child (1f) chose Magazines/Newspapers because of the ability to find out about celeb gossip
- 1 child (1m) had chosen Newspapers/Magazines because he thought they gave you more information.

For Q8 **How do you search on the Internet for information about your hobbies? (please tick as many as you like)** children were asked to complete

the following table by ticking the boxes provided and/or writing text opposite the “Another way” category.

Google	
Ask Jeeves	
I type in the search box on my Internet browser	
Another way (describe)	

Figure 20: Answer table for Q8 How do you search on the Internet for information about your hobbies? (please tick as many as you like)

28/28 (100%) of children answered this question with 9 (6f, 3m) children picking 1 answer, 15 (7f, 8m) picking 2 answers, 3 (2f, 1m) picking 3 answers and 1(1m) picking 4 answers. The table below shows the frequency with which each Search method was chosen.

Search method	Google	Ask Jeeves	I type in the search box on my Internet browser	Another way
Frequency	28	6	15	3

Table 18: Q8 How do you search on the Internet for information about your hobbies?

Google was the most popular answer with 28/28 (100%) of children choosing this search method. The second most popular answer was “I type in the search box in my Internet browser” with 15/28 (54%) children answering in this way. This was followed by 6/28 (21%) of children who chose Ask Jeeves and finally by 3 (11%) who said that they did this in Another way.

The graph below shows the frequency of children who chose each search method from the list provided.

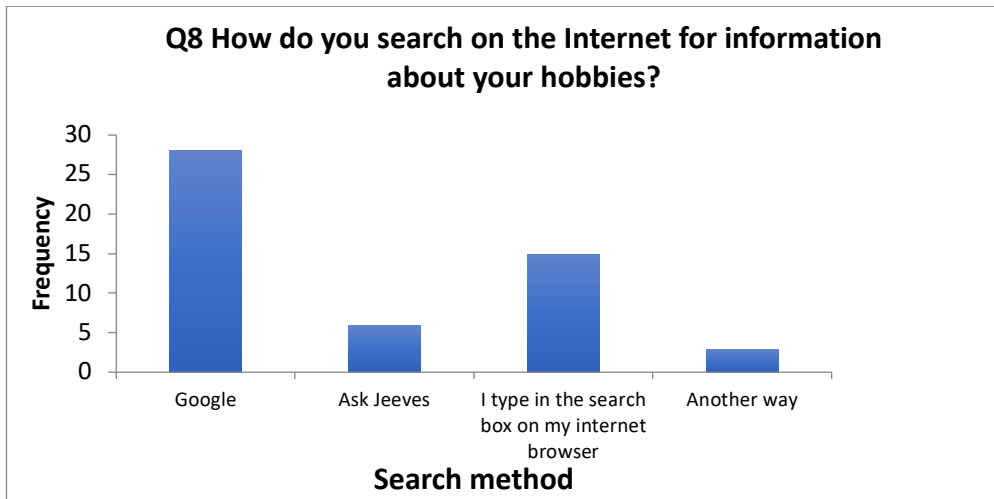


Figure 21: Q8 How do you search on the Internet for information about your hobbies?

The table below shows the spread of answers given by girls and boys to this question.

Search method	Google	Ask Jeeves	I type in the search box on my Internet browser	Another way	Total
Frequency girl	14	2	6	1	23
Frequency boy	14	4	9	2	29

Table 19: Q8 How do you search on the Internet for information about your hobbies (Boys vs. Girls)

It can be seen that boys and girls answered this question similarly, however, the greater total number of methods used overall by boys indicates that they were either more varied or more flexible in regard to their searching than the girls were, with methods other than Google being slightly more popular with boys than girls. On average boys chose 2.1 (29/14) methods from the list of search methods provided where girls chose 1.6 (23/14). methods. The graph below shows the spread of findings for Girls and Boys for this question.

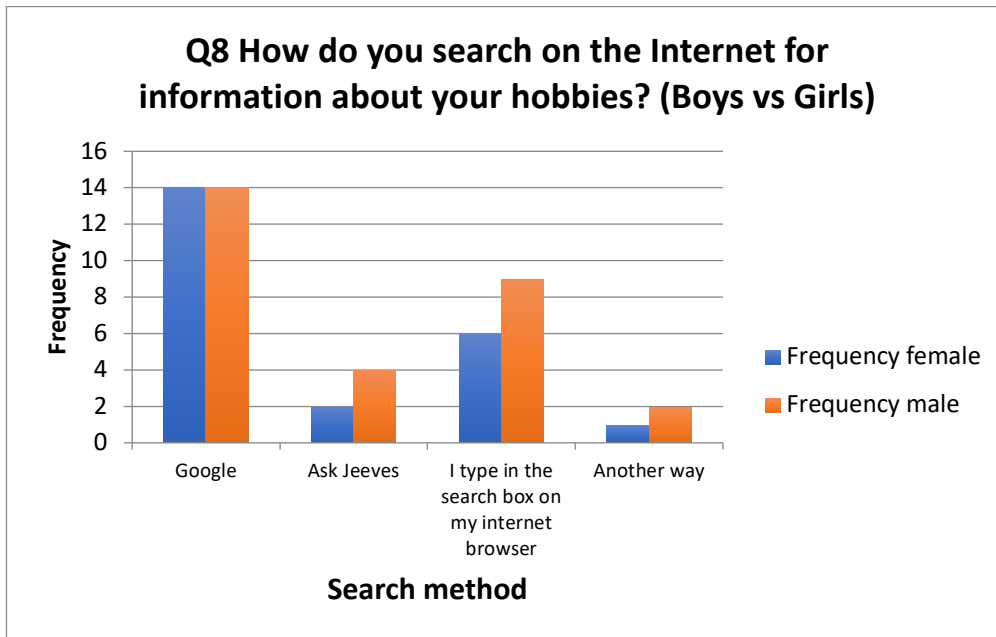


Figure 22: Q8 How do you search on the Internet for information about your hobbies? (Boys vs. Girls)

Of the 3 children who chose “Another Way”, one (1m) answered “Bing” and another (1m) answered “MSN Yahoo”. One (1f) provided no text. A cross-tabbing analysis revealed that there was no statistically significant difference between the answers that girls and boys gave for this question ($p = 0.66$).

For **Q9 What do you like to search for on the Internet? (please tick as many as you like)** children were asked to complete the following table:

Music	
Games	
Celebrities	
Videos	
Favourite characters	
Something else (Please describe)	

Figure 23: Answer table for Q9 What do you like to search for on the Internet? (please tick as many as you like)

27/28 (96%) of the children provided answers to this question. One (1f) wrote nothing. Children were told they could choose more than one answer, which they largely did. There were 83 answers chosen overall with 2 (2f) children choosing 5 categories, 9 (3f, 6m) choosing 4 categories, 7 (4f, 3m) choosing 3 categories, 7 (3f, 4m) choosing 2 categories and 2 (1f, 1m) choosing 1 category. The table below shows the frequency with which children chose each Hobby/Interest.

Hobby/ Interest	Music	Games	Celebrities	Videos	Favourite characters	Something else
Frequency	19	23	13	16	6	6

Table 20: Q9 What do you like to search for on the Internet?

The graph below shows the frequency with which children chose each Hobby/Interest.

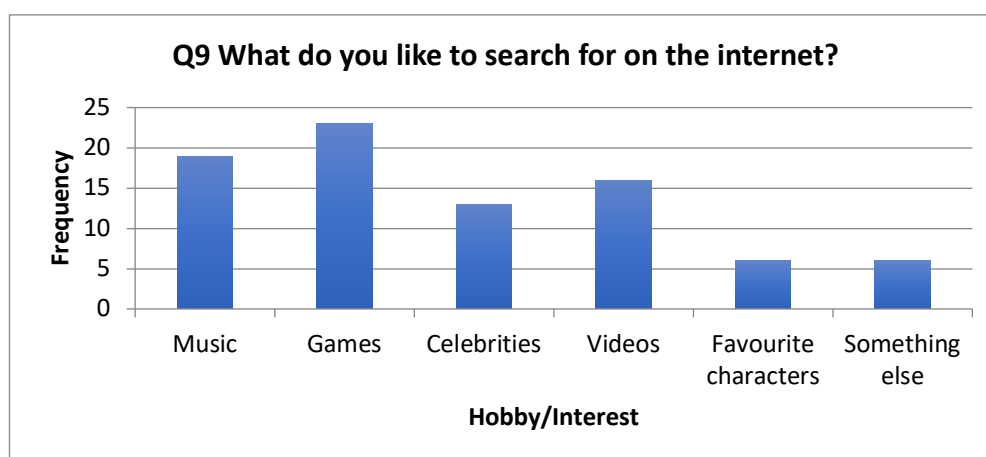


Figure 24: Q9 What do you like to search for on the Internet?

It can be seen from the table and graph above that the most popular choice overall was Games with a frequency of 23/27 (85%) of children choosing this

option. The table below shows that Games was also the most popular choice for girls as it was for boys.

Hobby/ Interest	Music	Games	Celebrities	Videos	Favourite characters	Something else	Total
Girl	10	11	10	6	3	2	42
Boy	9	12	3	10	3	4	41
Total	19	23	13	16	6	6	83

Table 21: Q9 What do you like to search for on the Internet (Girls vs. Boys)

The graph below shows a comparison between the choices of boys and girls.

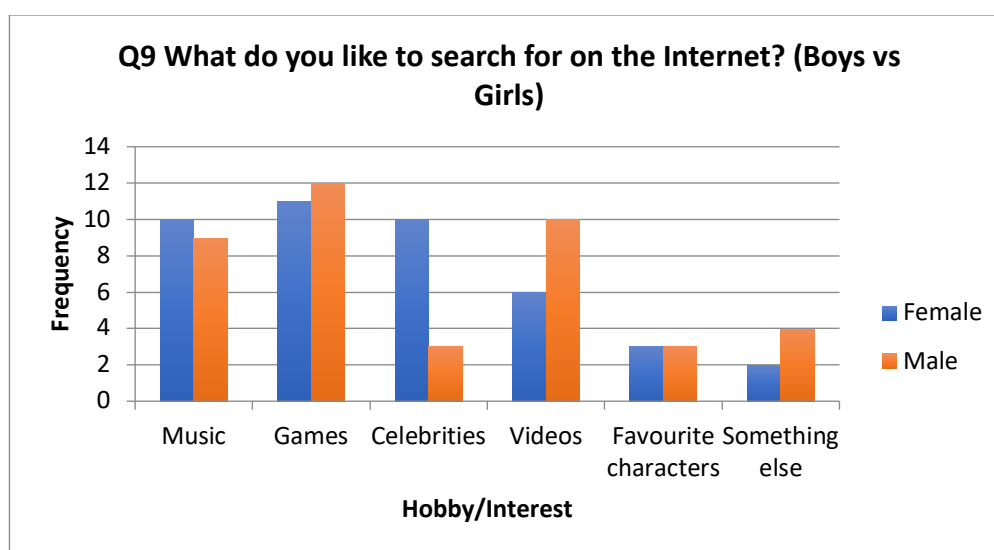


Figure 25: What do you like to search for on the Internet (Boys vs. Girls)

6 (2f, 4m) children picked the “Something else” option. They responded as follows: (3m) wrote “football websites”, (1f) wrote “Facebook games”, (1f) wrote “horses” and (1m) wrote “Films on YouTube”.

A cross-tabbing analysis of the answers to this question revealed that there was no statistical significance in difference between the answers of girls and boys to this question ($p=0.39$).

When a cross-tabbing analysis of **Q8 How do you search on the Internet for your hobbies** vs. **Q9 what do you like to search for on the Internet**, no statistically significant differences were found.

For **Q10 What are your 3 favourite websites? E.g. www.disney.com**, children were presented with the following box:

What are your 3 favourite websites? Eg www.disney.com
1
2
3

Figure 26: Answer box for Q10 What are your 3 favourite websites? E.g. www.disney.com

27/28 (96%) of the children provided an answer to this question. 1 child (1f) did not answer. 24/28 (11f, 13m) provided the 3 answers requested. 3/28 (2f, 1m) children provided only 2 answers. None wrote only 1 answer. A total of 77 answers were given and these referred to 34 categories. Of these 34 categories, 32 named specific websites, with 2 of the answers being more generic: “cars” and “horse”.

The table below shows the free text answers that were given along with the frequency of the answer ordered by most popular. The table also shows a breakdown by gender.

website name	Total frequency	Female frequency	Male frequency
youtube	15	7	8
y8 games	7	2	5
miniclip games	6	1	5
bebo	5	4	1
msn	4	2	2
facebook	3	2	1
frivolous	3	2	1
goal	2	0	2
liverpool	2	0	2
google	2	2	0
skysports	2	0	2
andiron arcade	2	0	2
hotmail	2	1	1
agame	2	2	0
barcelona	1	0	1
cars	1	0	1
migoland	1	1	0
dogbreedinfo	1	1	0
dog info centre	1	1	0
taylor lautner	1	0	1
horse	1	1	0
watchmovies.com	1	0	1
movieguide	1	0	1
jjb sports	1	0	1
cartoon network	1	0	1
disney	1	1	0
songs.pk	1	1	0
gogirlmag	1	1	0
gamesfreak	1	1	0
club penguin	1	1	0
puff games	1	0	1
gamesgogirls	1	1	0
addicting games	1	0	1
habbo	1	1	0
Total	77	36	41

Table 22: Q10 What are your three favourite websites?

The answers were then grouped in categories as follows:

Games, YouTube, Sport, Social Media, Google, Cartoons, Films, Animals, Music.

(NB These same categories are in line with previous categories used both in the

survey and in responses given to other questions within it. These categories will be used further in the discussion of findings in Q11 wherein the manner in which children said they know about these sites is examined).

The table below shows the frequency with which each of these categories was chosen along with a breakdown for Girls' and Boys' choices.

website type	Total Frequency	Female frequency	Male frequency
Games	27	11	16
Youtube	15	7	8
Social media	15	10	5
Sport	9	0	9
Animals	3	3	0
Films	2	0	2
Music	2	2	0
Cartoons	2	1	1
Google	2	2	0
Total	77	36	41

Table 23: Q10 What are your three favourite websites (grouped by type)

The graph below shows the frequency with which each an item in one of these groupings was chosen, with a breakdown by Boys and Girls.

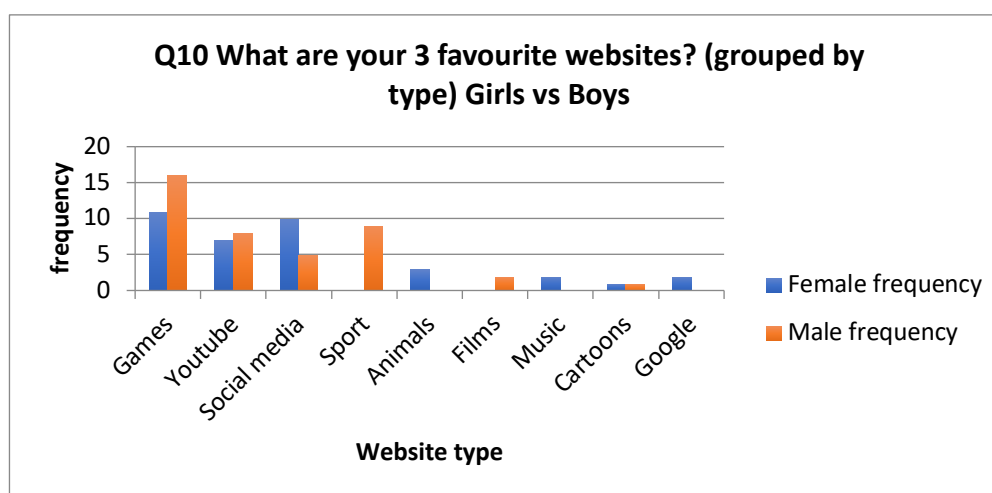


Figure 27: Q10 What are your three favourite websites (grouped by type)

For Q11 How do you know about these websites? (Please describe)

children were presented with the following (as a follow on from the previous question Q10 which was just above on the same page of the survey):

<p>How do you know about these websites? (Please describe).</p> <p>1</p> <p>2</p> <p>3</p>

Figure 28: Answer box for Q11 How do you know about these websites? (Please describe)

26/28 (93%) of the children provided an answer to this question. 2 girls (2f) wrote nothing for this question. 14 children (6f, 8m) provided the 3 answers requested, 6 children (4f, 2m) gave 2 answers, 6 children (2f, 4m) gave only one answer.

Using the groupings of website types outlined in the previous question's analysis (Q10) the following data emerged about the ways in which children knew about the websites they outlined in Q10 above.

Way of knowing	Total frequency	Girl frequency	Boy frequency
Friends	26	11	15
Family	8	8	0
Brother	6	3	3
Cousin	4	1	3
TV	4	0	4
Google	3	0	3
Sister	2	2	0
Magazine	2	1	1
I like it	2	2	0
I'm a fan	2	0	2
Mum	1	1	0

Dad	1	0	1
Internet	1	1	0
Myself	1	0	1
It's common	1	0	1
I wanted it	1	1	0
People	1	0	1
It's Useful	1	1	0
Saw when I was searching	1	0	1
Totals	68	32	36

Table 24: Q11 How do you know about these websites?

Website type	Ways of knowing about websites (Girls)																			
	Friends	Family	Brother	Cousin	TV	Google	Sister	Magazine	I like it	I'm a fan	Mum	Dad	Internet	Myself	It's common	I wanted it	People	It's useful	Saw when I was searching	
Games	7	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
YouTube	2	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Social Media	0	3	1	1	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0	0
Sport	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Films	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Animals	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Music	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cartoons	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Google	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	11	8	3	1	0	0	2	1	2	0	1	0	1	0	0	1	0	0	0	1

Table 25: Q11 How do you know about these websites? (Girls)

The table below shows how Boys said they knew about the websites they picked in Q10.

Website type	Way of knowing about websites (Boys)																		
	Friends	Family	Brother	Cousin	TV	Google	Sister	Magazine	I like it	I'm a fan	Mum	Dad	Internet	Myself	It's common	I wanted it	People	It's useful	Saw when I was searching
Games	8	0	2	2	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
YouTube	3	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	1
Sport	0	0	1	0	2	2	0	1	0	2	0	0	0	0	0	0	0	0	0
Social Media	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Movies	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Animals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Music	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cartoons	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Google	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	15	0	3	3	4	3	0	1	0	2	1	0	1	0	1	0	1	0	1

Table 26: Q11 How do you know about these websites? (Boys)

For **Q12 I have a computer at home True /False** 27/28 (96%) of the children answered the question with all of those 27 answering True to indicate that they had a computer at home. One child (1f) did not answer the question.

For **Q13 I have Internet access at home: True/False** 27/28 (96%) children answered the question with 26/28 (93%) answering True to indicate that they had Internet access at home. One child (1f) gave the answer False to indicate no Internet access at home and one (1f) did not answer the question.

For **Q14 I have a library card True/False** 27/28 (96%) of the children answered the question 24/27 (88%) answering True to indicate that they had a library card. Three (3m) children gave the answer False indicating that they had no library card and one (1f) child did not answer the question.

For **Q15 How often do you use the following**: children had been asked to complete a grid of different communication methods along with their frequency of usage of those methods. The grid looked as follows:

	Never	Occasionally	Once a week	A few times a week	Every day
Email					
Bebo					
Facebook					
MySpace					
Twitter					
MSN chat					
Mobile phone					

Figure 29: Answer grid for Q15 How often do you use the following

28/28 (100%) of the children provided answers for this question and the majority completed it in full. NB where nothing had been ticked against a category of communication, this was taken to indicate an answer of “Never”.

The graph below shows the distribution of responses for this question.

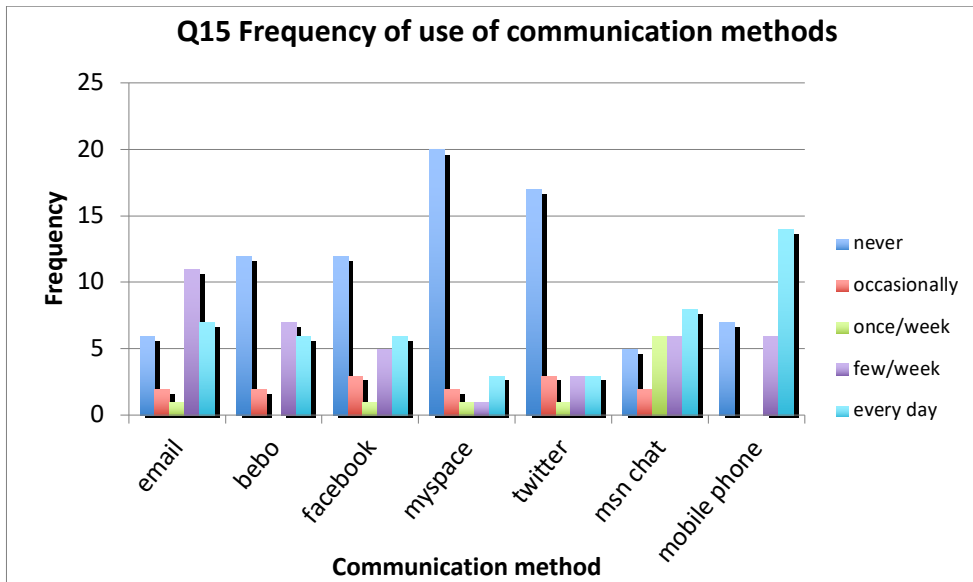


Figure 30: Q15 Frequency of use of communication methods

From the graph above it can be seen that MySpace and Twitter emerged as infrequently used with mobile phone usage emerging as frequently used.

Using a weighting of 0=**Never**, 1=**Occasionally**, 2=**Once a week**, 3=**A Few times a week** and 4=**Every Day** the table below emerged:

Communication method	Email	Bebo	Facebook	MySpace	Twitter	MSN chat	Mobile phone
Frequency	55	40	40	19	24	68	69

Table 27: Q15 Communication methods (weighted) all children

The graph below shows the frequency of each communication method.

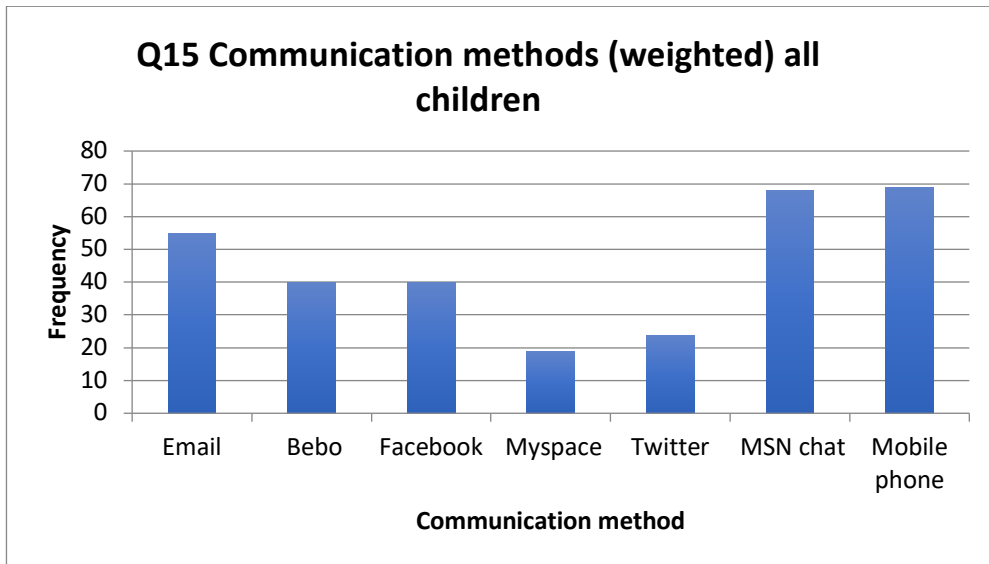


Figure 31: Q15 Communication methods (weighted)

The table below shows the communication methods as reported by Girls and Boys.

Communication method	Email	Bebo	Facebook	MySpace	Twitter	MSN chat	Mobile phone
Total	55	40	40	19	24	68	69
Girl	26	18	23	8	7	35	43
Boy	29	22	17	11	17	33	26

Table 28: Q15 Communication methods (weighted) Girls vs. Boys

The graph below shows the communication methods chosen by girls and boys.

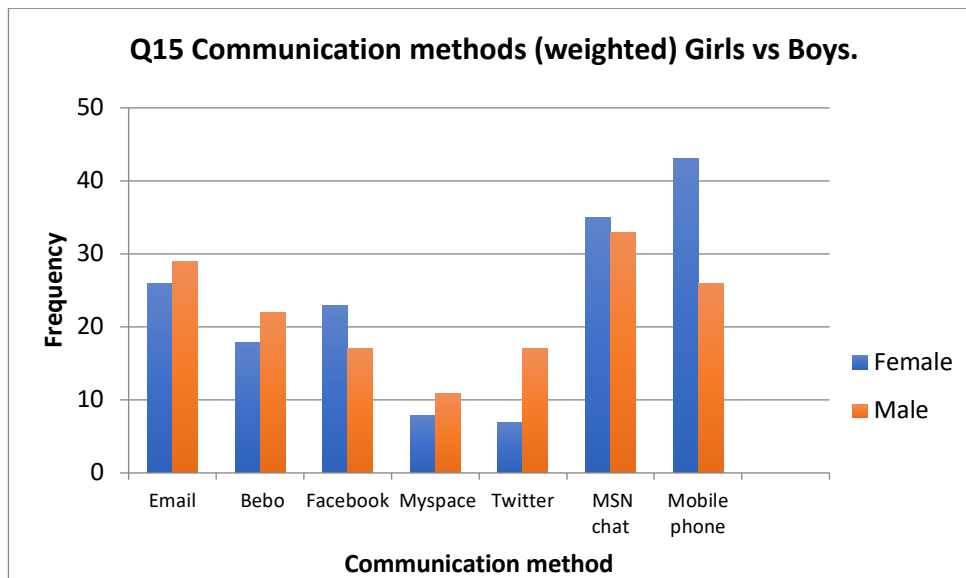


Figure 32: Q15 Communication methods (weighted) Girls vs Boys

Performing an analysis using cross-tabbing revealed that there was a statistically significance difference between boys and girls in their use of MSN chat with girls using it significantly more ($p=0.03$).

When a cross-tabbing analysis was made of **Q15 Frequency of use of communication methods** vs **Q8 Favourite ways to look for information** no statistically significant difference was found between any of the categories.

When a cross-tabbing analysis was made of Q15 Frequency of use of communication methods vs Q5 on hobby preferences there were statistically significant differences for the following combinations:

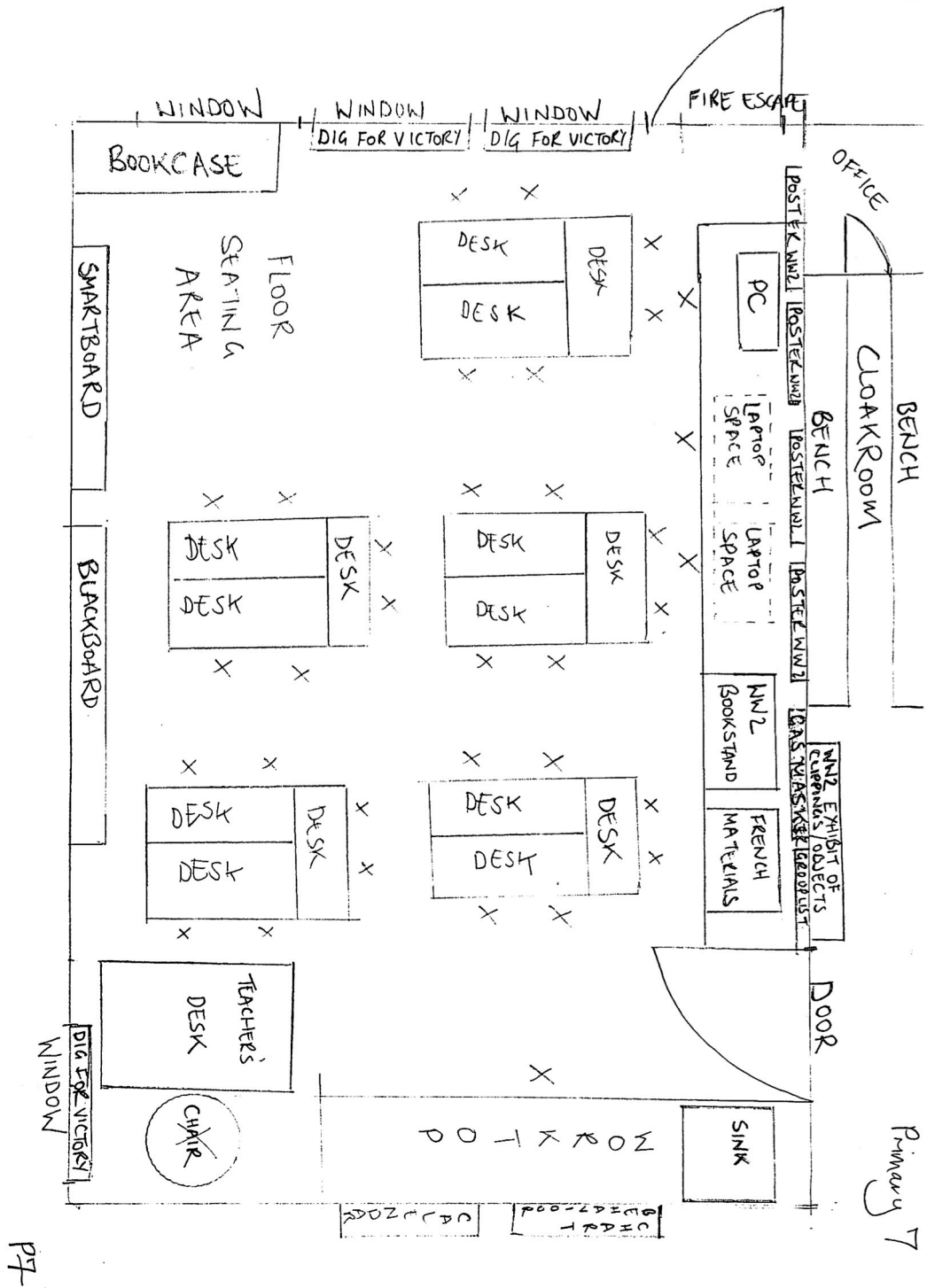
- Twitter and Tennis ($p=0.02$) with frequent users of Twitter more likely to also say they liked like Tennis.
- MSN messenger and watching TV ($p=0.04$) with frequent users of MSN messenger more likely say they liked to watch TV programmes.

When a cross-tabbing analysis was made of **Q15 Frequency of use of communication methods** vs **Q8 What do you like to search for** no statistically significant differences were found.

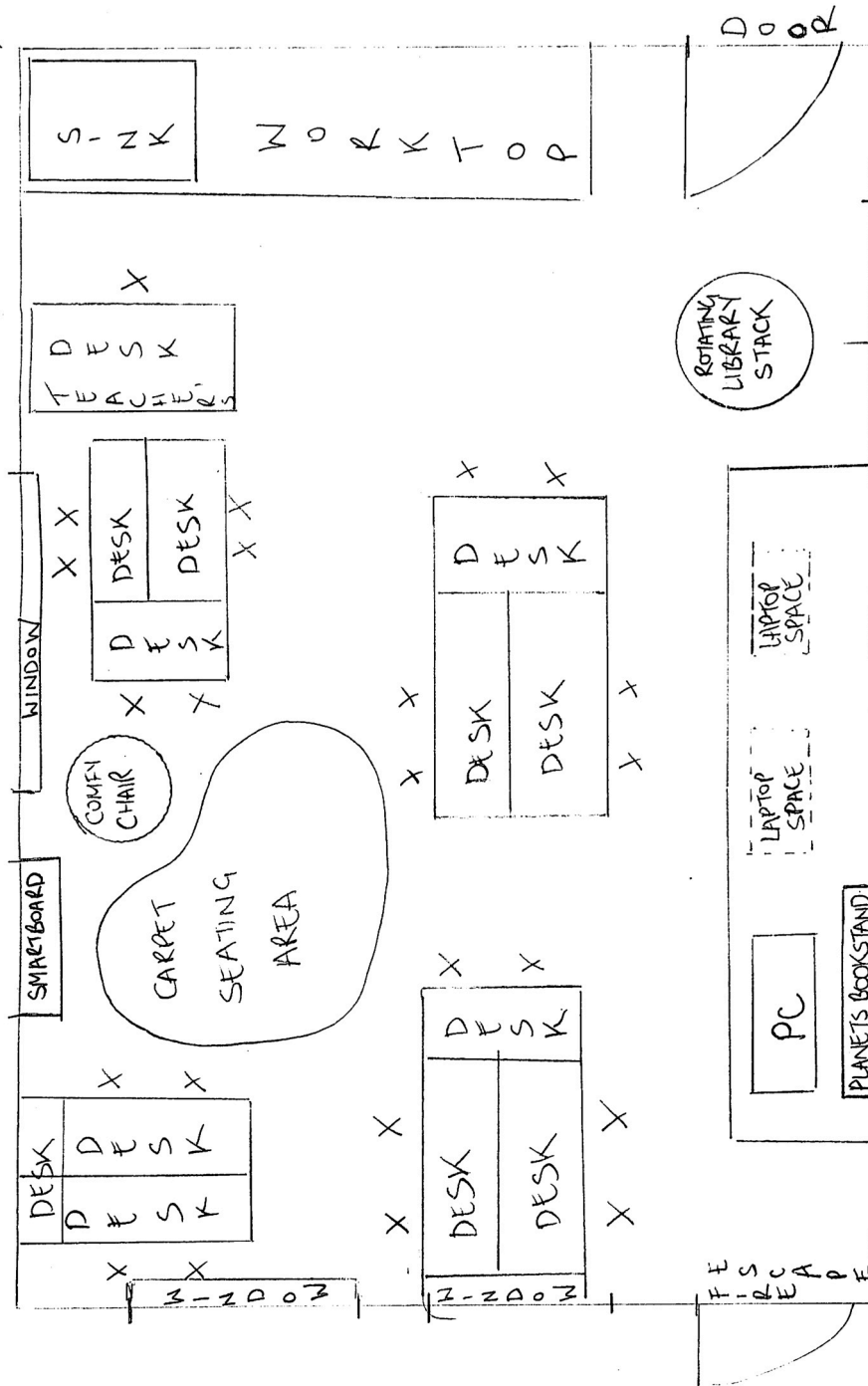
Q16 Is there anything else you'd like to tell me about how you find out about your hobbies and interests?

None of the children wrote anything for this question beyond the occasional "No" or "Thankyou".

Appendix 19: Map 1: Class Layout P7



Primary 5



P5

Appendix 21: List of Books in P7 Class Topic Area

War From Ancient Egypt to Iraq by Saul David

Wartime Cookbook Hodder & Stoughton

Famous People Famous Lives: Anne Frank

Food by Franklin Watts

Rationing 'The Home Front' by Fiona Reynoldson

The Oxford Children's Encyclopedia

War on the Home Front by Juliet Gardiner

Lifetimes: Anne Frank

Changing Times: Cooking

Appendix 22: List of Resources in P7 Local Authority Topic Box

Resource Box contents (teacher's comments in brackets)

- Wartime Scrapbook (can be used for personal reading)
- Posters and leaflets (think about what these are about)
- Book on Entertainment (mentions children)
- The Past in Pictures 'Home Front' (people's memories)
- The Boy With The Striped Pyjamas (nice to get information from fiction too)
- Evacuees (fun)
- Home Guard
- Schools reference to Victorian schools
- Glasgow: City at War
- Air Raids (duplicate of a book they have already)
- Exploring the second world war (Contains Did you know? sections)
- Wartime cookbook
- WW2 and the Blitz
- Scotland since 1900 'changes' (use some of it)
- Rationing book
- The Home Front
- Women's War
- Scotland and the Second World War
- Images of War – Posters
- Battle of Britain (folder with documents – like stuff from a museum)

Curriculum for Excellence

The 3-18 curriculum aims to ensure that all children and young people in Scotland develop the attributes, knowledge and skills they will need to flourish in life, learning and work.

It aims to develop four capacities, helping children to become:

- Successful learners
- Confident individuals
- Responsible citizens
- Effective contributors

The curriculum should include space for learning beyond subject boundaries, so that children and young people can make connections between different areas of learning.

Interdisciplinary studies, based upon groupings of experiences and outcomes from within and across curriculum areas, can provide relevant, challenging and enjoyable learning experiences and stimulating contexts to meet the varied needs of children and young people.

Revisiting a concept or skill from different perspectives deepens understanding, and can also make the curriculum more coherent and meaningful from the learner's point of view.

Interdisciplinary studies can also take advantage of opportunities to work with partners who are able to offer and support enriched learning experiences and opportunities for young people's wider involvement in society.

Effective interdisciplinary learning:

- can take the form of individual one- off projects or longer courses of study
- is planned around clear purposes
- is based upon experiences and outcomes drawn from different curriculum areas or subjects within them
- ensures progression in skills and in knowledge and understanding
- can provide opportunities for mixed-stage learning which is interest-based.
- The curriculum should include space for learning beyond subject boundaries, so that children and young people can make connections between different areas of learning.

The eight curriculum areas are:

- Expressive arts
- Health and wellbeing
- Languages
- Mathematics
- Religious and moral education
- Sciences
- **Social studies**
- Technologies

Children in primaries 4-7 are in the “Second” stage of learning. At this stage, the curriculum guidelines have the following to say about what children are expected to be able to do.

Finding and using information

- Using what I know about the features of different types of texts, I can find, select and sort information from a variety of sources and use this for different purposes.

- I can make notes, organise them under suitable headings and use them to understand information, develop my thinking, explore problems and create new texts, using my own words as appropriate.

Organising and using information

- I can use my notes and other types of writing to help me understand information and ideas, explore problems, make decisions, generate and develop ideas or create new text.
- I recognise the need to acknowledge my sources and can do this appropriately.
- By considering the type of text I am creating, I can select ideas and relevant information, organise these in an appropriate way for my purpose and use suitable vocabulary for my audience.

Reading

- I regularly select and read, listen to or watch texts which I enjoy and find interesting, and I can explain why I prefer certain texts and authors.
- I am learning to select and use strategies and resources before I read, and as I read, to help make the meaning of texts clear.
- I can select and use a range of strategies and resources before I read, and as I read, to make meaning clear and give reasons for my selection.

Writing

- I enjoy creating texts of my choice and I regularly select subject, purpose, format and resources to suit the needs of my audience.
- I can spell most of the words I need to communicate, using spelling rules, specialist vocabulary, self-correction techniques and a range of resources.

- In both short and extended texts, I can use appropriate punctuation, vary my sentence structures and divide my work into paragraphs in a way that makes sense to my reader.
- Throughout the writing process, I can check that my writing makes sense and meets its purpose.
- I consider the impact that layout and presentation will have and can combine lettering, graphics and other features to engage my reader.

Organizing and using information

- I can use my notes and other types of writing to help me understand information and ideas, explore problems, make decisions, generate and develop ideas or create new text.
- I recognise the need to acknowledge my sources and can do this appropriately.
- By considering the type of text I am creating, I can select ideas and relevant information, organise these in an appropriate way for my purpose and use suitable vocabulary for my audience.

Creating texts

- I can convey information, describe events, explain processes or combine ideas in different ways.
- I can persuade, argue, explore issues or express an opinion using relevant supporting detail and/or evidence.

ICT to enhance learning

- As I extend and enhance my knowledge of features of various types of software, including those which help find, organise, manage and access information, I can apply what I learn in different situations.

- I can access, retrieve and use information from electronic sources to support, enrich or extend learning in different contexts.
- Throughout all my learning, I can use search facilities of electronic sources to access and retrieve information, recognising the importance this has in my place of learning, at home and in the workplace.

People, past events and societies

- I can use primary and secondary sources selectively to research events in the past.
- I can interpret historical evidence from a range of periods to help to build a picture of Scotland's heritage and my sense of chronology.
- I can investigate a Scottish historical theme to discover how past events or the actions of individuals or groups have shaped Scottish society.
- I can compare and contrast a society in the past with my own and contribute to a discussion of the similarities and differences.
- I can discuss why people and events from a particular time in the past were important, placing them within a historical sequence.

Topic World War 2: The Scottish Home Front

Key Skills:

- Observing, describing and recording
- Comparing and contrasting to draw valid conclusions
- Exploring and evaluating different types of sources and evidence
- Development of curiosity and problem solving skills and the capacity to take initiative
- Interacting with others and developing a sense of self and others
- Planning and reviewing investigation strategies
- Developing the capacity for critical thinking through accessing, analysing and using information from a wide variety of sources
- Discussion and informed debate
- Developing reasons and justified points of view
- Developing and using maps in a variety of contexts

Assessment Criteria

- Final Summative Assessment
- Undertake investigations and present their thinking orally in writing or in a multimedia format
- Describe and record explore and analyse sources
- Interpret and display information
- Talk and debate with peers and adults
- Over arching experiences
- Develop my understanding of the history heritage and culture of Scotland and appreciate of my local and national heritage within the world
- Broaden my understanding of the world by learning about human activities and achievements in the past and present
- Explore and evaluate different types of sources and evidence

- Learn how to locate explore and link periods people and events in time and place
- Establish firm foundations for lifelong learning and for further specialized study and careers.

Curricular Links

- Art: VE day painting, Make gas masks, Making adverts
- Music: Listening to and appreciating music from the war, Sound pictures
- ICT: School website, Research elements of topic using internet, Creation of PowerPoint show, Digital camera work on trips out of school, Video camera work to record interviews/drama
- PE/Drama Hot seat interviewing, Conducting interviews, Role play through GCC, Drama pack written for this topic
- Eco Activities: Healthy eating through rationing, Growing vegetables, Recycling and reusing materials
- PSD: Healthy snacks, Reinforce golden rules, Role play resolving conflict
- Language: Evacuation letters, Ration books, Newspaper articles, Instruction writing, Gas masks, War food, Propaganda posters, Making adverts, Listen to Neville chamberlain speech, Interview skills, Talking and listening, Presentation skills.
- Maths: Rationing-problem solving based on rationing, Look at old money, Map work distances across sea, Graph work.