University of Strathclyde

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To what extent can the Matrix for Teacher Noticing represent the Noticing of primary teachers?
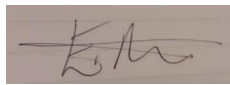
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Declaration

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Table of Contents

List of Figures

List of Tables

List of Abbreviations

CLPL – Career-long Professional Learning

ES – Education Scotland

GTCS – General Teaching Council for Scotland

LTNF – Learning to Notice Framework (Van Es, 2011)

MTN – Matrix for Teacher Noticing

SG – Scottish Government

Abstract

The power and responsibility of teachers has been the focus on the national and international sphere across the minority world (countries largely considered 'developed', with a small percentage of people living there). Within the Scottish context there are headline aims of Excellence and Equity, underpinned by the commitment to raising standards and closing the poverty-related attainment gap (Scottish Government (SG), 2016). Achieving this largely centres on improving the quality of teaching that pupils receive (Tay et al., 2023) and to that end, teacher learning plays a significant role (Alvunger et al., 2017; Jan, 2017).

What teachers do matters (Sugrue, 2004); they influence pupils' classroom experiences and learning (Alvunger et al., 2017; Davids & Waghid, 2020). Teacher Noticing is a promising and developing construct that promotes the use of responsive, reflective teaching to enable teachers to be creative and empowered in their own learning (Lee & Kim, 2022). They are more likely to make an impact on learner outcomes as they can use their reflections to better plan for next steps in learning (Weins et al., 2021). Noticing demonstrates how teachers make sense of classroom experiences and actively use their reflections to make informed pedagogical decisions for the future, within the lesson and beyond (Jacobs et al., 2010). The experience can be transformative not simply for teacher knowledge and skills, but also their perspectives and values (Van Es et al., 2017).

This thesis aims to explore the application of a new framework for Teacher Noticing that aims to address constrictions and limitations identified within the commonly used Learning to Notice Framework (LTNF) (Van Es, 2011). A new Matrix for Teacher Noticing (MTN) was created and implemented in a learning intervention

undertaken by three Scottish primary teachers. The outcomes and impact of the experience are shared and understood by using the Matrix to represent their learning and the shifts they made. Thus, the Matrix better represents Teacher Noticing with complexity, as well as how isolated 'shifts' are typified to better inform those who plan, deliver, and evaluate teacher learning experiences and their impact in schools.

1 Introduction

This thesis explores the extent to which teachers' learning experiences can be illuminated through Teacher Noticing. In doing so, teachers' experiences are represented on two frameworks for Teacher Noticing: the commonly used Learning to Notice Framework (LTNF) (Van Es, 2011) and a new Matrix for Teacher Noticing (MTN). This is an iterative investigation, whereby the MTN developed from the application and evaluation of the existing LTNF. It is both an outcome in itself and an analytic tool to answer the research questions. The goal of this new Matrix is to represent multidimensional Teacher Noticing and identify how high-level Noticing can be isolated and understood.

This chapter outlines the background and rationale behind the intervention that took place, including outlining the political and national context at the time of the intervention. Key assumptions and terminology are also shared and defined.

1.1 Introduction and Rationale

In Scotland, as is paralleled in other countries throughout the minority world, the educational achievement of children is considered crucial to the economic growth and stability of the nation. Political and government agendas the world over focus on raising standards in schools by harnessing the power of individual teachers to lead change in ways that improve outcomes for the children in their classroom (Kim et al., 2019; Tay et al., 2023). While seemingly simplistic in notion, this premise exist not simply within the Scottish education system, but as part of a wider global agenda (Darling-Hammond et al., 2017; Fraser, 2017). This has developed the view that teacher learning is the cornerstone of pupil, school, and societal success (Kim et al., 2019).

Research has shown that there is enormous potential within individual teachers to foster or hinder the academic progress of their pupils, leading to the widely accepted conclusion that improving teaching improves pupil learning (Alvunger et al., 2017; Jan, 2017). Yet this research sits within three complex systems: micro, meso and macro (Potter, 2023). At the macro level, teachers within the Scottish education system are working within a national curriculum and key national initiatives, policies and practices. At the meso level, teachers support the improvement priorities, directions and directives of their local authority and school setting. And crucially, the micro level, which is concerned with teachers and learners operating within their own unique classroom environment. Arguably the most important level, the micro level is significant within this intervention, exploring teacher learning as related to teacher's own practice, where I believe they have the greatest voice, autonomy and control over pupil learning experiences.

Whilst there are differing perspectives on how to support teacher learning, there are certain factors considered fundamental to its success: reflection (Huang et al., 2020); inquiry (Robinson, 2010), and metacognition (Portilho & Medina, 2016) as well as a connection to teachers' own practice (Kennedy, 2011) and learning that is context-specific and 'do-able' (De Jong et al., 2020). Yet what is often missing is what this looks like within the classroom. Understanding how to identify and demonstrate teacher learning in a holistic way that demonstrates the impact on teachers' ability to provide responsive, needs-based and tailored instruction is a challenge at all levels (Erickson, 2011). Historically, there has also been a lack of research into the long-term impact of teacher learning experiences on pupils and on teachers (Ventisa & Brown, 2023).

Addressing this challenge is where Teacher Noticing developed (Erickson, 2011). The concept of Teacher Noticing supports a framework to represent teachers' learning in terms of how they make sense of the information within the classroom and crucially, how they use this to inform future decision making (Alwast & Vorhöleter, 2021). The field has grown in recognition for its ability to represent teacher learning; however, current frameworks, particularly the popular LTNF (Van Es, 2011), have faced significant criticism (Scheiner, 2016; Wei et al., 2013). While impactful, this demonstrates that there is further scope within this field in how to represent teacher learning.

Engaging with this paradigm, the purpose of this investigation was to devise, implement, and evaluate a new Matrix for Teacher Noticing within a literacy context. The Matrix was created and applied to a teacher learning intervention to demonstrate a robust, accurate model for representing the Noticing abilities of three primary teachers. It aimed to provide insight into what is taking place during high-level Noticing and how this can be better isolated, understood and used to inform future learning experiences for teachers. The framework was the first of its kind to develop from a literacy context as the prominent frameworks developed from Mathematics (for example see Amador et al., 2021). Aiming to explore the impact from teachers' own experience and to represent their Noticing abilities, this investigation was conducted with three primary class teachers working within one Scottish local authority.

The new contribution that this thesis offers to the field is a MTN that is different to the frameworks advanced by the likes of Van Es (2011). Analysis of teachers' experiences within the intervention was undertaken twice, once mapped onto the LTNF (Van Es, 2011) and once onto a MTN. This allows evaluation and exploration

into the suitability of both frameworks to represent participants' experiences, supported by narrative accounts from the teachers themselves.

1.2 Structure of this Thesis

In chapter one, I share the landscape of the investigation into Teacher Noticing. I set the context and, in doing so, explore teacher learning in Scotland, highlighting the relevant current policy directives and a brief historical perspective. I also explore the role and function of the General Teaching Council for Scotland (GTCS). I also touch briefly on the international context to understand how the current picture in Scotland reflects other minority countries. I then define the terms used, unpicking the tensions within the field before offering my working definition of teacher learning for use in this thesis.

In chapter two I conduct a review of the relevant literature that shaped the focus, purpose, and research design of this investigation. I explore key tensions in the research, allowing a critical lens to view previous theory and research in the field of teacher learning, including why teacher learning is important, how teachers learn, and how this learning can be represented. I explore factors such as reflection, metacognition and inquiry to explore how teacher learning can be facilitated. This results in an exploration in the field of Teacher Noticing: how it developed, the tensions within the different conceptualisations, the impact from previous research and wider influences within the field. I then explore the prominent framework for Teacher Noticing and provide an evaluation based on the literature, thereby leading to the creation of the overarching research questions at the heart of this thesis.

In chapter three, I discuss the methodological considerations and explain how my investigation design came together from the gaps and tensions in research to create a

full experience with methods and tools for representation. This includes how I gathered, presented, and analysed my data in the form of three case studies as well as the steps I took to analyse my data sets and the ethical considerations at play.

In chapter four, I present my findings in the form of three case studies which represent each teacher's experience within the intervention. I explore their learning and how they have developed their Noticing abilities from pre- and post-intervention data, underpinned by prominent literature within the field. I highlight significant moments which demonstrate the learning that has taken place and how its representation can be demonstrated to show impact.

In chapter five, I present the findings as represented on both the LTNF (Van Es, 2011) and the MTN. Each teacher's experience is reported in turn. The representations of their experiences on both frameworks are shared side-by-side to compare and contrast each teachers' experiences. I explore outcomes of both frameworks that align, and unpack where tensions on placement categories arise, supported by the literature within the field.

In chapter six, I evaluate the frameworks. I reflect on how the findings of this investigation relate to the literature I have explored. I provide a summary of the key themes from each teacher's experiences, highlighting areas of similarity as well as contrasts in their experiences allowing for alignment and tensions from previous research. I also share my evaluation of the effectiveness of the MTN. This is achieved though exploring key challenges identified from the most commonly used LTNF (Van Es, 2011) before concluding what the findings of this investigation, and their representation on the Matrix can tell us about Teacher Noticing. This in turn allows for an evaluation of the role and potential of the Matrix for representing Teacher Noticing in an accurate and multidimensional way and offers commentary

on the role of high-level Noticing in relation to the components of Teacher Noticing based on these findings.

In chapter seven, I conclude by reflecting on what the findings mean and how they answer the overarching questions at the heart of this thesis. I identify key implications and recommendations and where previous research and practice paradigms are challenged. I also highlight the limitations of the research design and how future research could strengthen this. I conclude with a reflection based on my own learning as part of my EdD experience.

1.3 Foundational Assumption about Teacher Experience

Throughout my initial teacher education and into my early career I held the view that teachers who were more experienced were simply better. They had been in the teaching profession for several years, had learned more, and were therefore better than those who were more newly qualified. Indeed, Richter et al. (2011) states that new teachers "draw more on the professional expertise of more experienced teachers" (p. 124). However, I found that over time, through my own learning as a teacher and as a senior leader, I came to believe that the quality of a teacher is not determined by their length of service, and that more years in the classroom does not directly attribute to quality or effective teaching. In some cases, I found the contrary to be true. I came to find that teachers who are 'good' come from all ages and walks of life and that teachers start from different places and improve to differing degrees.

Graham et al. (2020) set out to explore if indeed more 'experienced' teachers were better. Their results found there was no evidence that beginning teachers (those with less than three years' experience) were of any lesser quality than those who had been teaching for longer. They suggest that quality teacher learning, that is informed by

research, would be beneficial for teachers of all lengths of service. Interestingly, their results parallel findings from Steven et al. (2005), suggesting that, after two to three years, teachers stop improving in their practice. Graham et al. (2020) found "some evidence of a decline in teaching quality for teachers with 4-5 years experience" (p. 1). Rolls and Plauborg (2009) propose that generally, teachers new to the role are keen to learn as they are faced with new challenges they have not yet experienced, so their learning is propelled in these initial years. This can be supported by Van Daal et al. (2013) who suggest that teachers who have been in the role for longer are more likely to avoid engaging in learning experiences, which is further supported by Cameron et al. (2013) who demonstrate that longer serving teachers are more selective in the sorts of learning experiences with which they choose to engage.

Hanushek and Rivkin (2006) also conclude that teachers with the longest experience are not necessarily the most efficient in the role. This challenges the long-held assumption that teachers develop along a continuum (Konig et al., 2022). Berliner (2001) theorised that there are five different stages within a teacher's development. Teachers progress through the stages in increments, determined by experience, moving from Novice to Expert leading to the popular view that increased time in the classroom, or 'experience', naturally leads to increased quality of practice (Walker, 2016).

1.4 My Role

At the time of the investigation, I was working within a Scottish local authority Education Department. My role centred on improving literacy outcomes for learners as part of the National Improvement Framework (SG, 2016b), working with schools to close the attainment gap. My own motivation for taking on this role was simple: to make a difference and to impact positively on learners' experiences in the classroom.

Upon accepting the post, I was concerned about the importance placed on school performance data to measure the effectiveness of my role. I was concerned that my own values may be in contention with my new role, wanting to lead change 'on the ground' while thinking about how I might make the work of teacher learning visible and represented.

1.5 Policy Landscape

Since 2015, the aims of 'Excellence and Equity' have been woven deeply within policy from the highest level of Scottish Government (Scottish Government, 2016a), filtering down into school and local authority development plans. These aims led the strategic direction for education improvement across the nation and were underpinned by a national framework and supporting initiative outlined below.

1.5.1 The Scottish Attainment Challenge

In 2015 a new, targeted initiative called the Scottish Attainment Challenge (Education Scotland (ES), 2017) was launched. The challenge provided funding to nine local authorities and individual schools, targeting areas of literacy, numeracy, and health & well-being to raise attainment and close the poverty-related attainment gap (ES, 2017). It aimed to tackle inequality so that all Scottish children have equal opportunity to succeed (SG, 2018). It was founded on the view that this inequality comes from the difference in educational achievement of children from the most and least disadvantaged households. Therefore, raising attainment for the most vulnerable learners was central to closing the poverty-related attainment gap and making Scotland 'The Best Place In The World to Grow Up' (ES, 2017).

1.5.2 The National Improvement Framework

The Scottish Attainment Challenge was underpinned by the National Improvement Framework (SG, 2016b). Launched in 2016, it presented a road map of the improvements required to take Scotland to a world-leading education system (SG, 2016). The framework outlined six 'drivers' of improvement including, teacher professionalism and school leadership, under the premise that the combination of these could make the difference to the achievement and outcomes for pupils (SG, 2016). Teacher professionalism specifically focused on the quality of teaching and the impact it has on pupil progress and achievement (SG, 2017). It centred on the belief that teachers' skills and competencies were linked to the quality of experiences for learners and therefore raising the standards of teaching would help to make this a reality (SG, 2017). A way to achieve this aim was raising standards in schools, placing a focus on what teachers do and why.

1.6 A Brief History of Professional Learning in Scotland

A Teaching Profession for the 21st Century (Committee of Inquiry into Professional Conditions of Service for Teachers, 2001), enacted one of the most significant entitlements for teachers in Scotland. The report took forward recommendations from the earlier McCrone Report (2000). The inquiry sought to explore teachers' pay and conditions and resulted in delivering wage increases, entitlement to non-class contact time for planning and assessment, and an agreed salary structure. It further included a strand of the inquiry on teacher learning, with the mandate that teachers undertake an additional thirty-five hours of Career-Long Professional Learning (CLPL) each year.

Teaching Scotland's Future (Donaldson, 2010) also influenced teacher learning. Donaldson reviewed teacher education and learning in Scotland and stressed the

importance high-quality education offers in generating human capital and economic growth for the nation, attributing pupil outcomes to teacher learning. The report resulted in fifty recommendations to improve teacher learning and sparked the search for experiences and interventions to help promote the positive trajectory of school improvement. These recommendations included increased engagement in professional learning experiences, greater awareness of the value and importance of said experience, and a move towards evaluating the impact of professional learning on outcomes for learners (Donaldson, 2010). While many positives were described, there were still aspects requiring further development, including: reducing the disjointed nature, quality, and access to professional learning experiences for teachers (Kennedy, 2015). It has, though, been criticised for providing a simplistic causality between input and output of teacher learning experiences that fails to recognise the complex nature of learning (Opfer & Pedder, 2011).

Evaluation of some of the recommendations shows an increased willingness of teachers to engage with learning and explore new approaches, as well as an increase in teacher ownership over their learning. However, there is still work to be done with recommendations at all levels, including clarity on the role of universities, schools, and local authorities to support new teachers, as well as more support for those on the Standard for CLPL with access to local authority learning offers, mentoring and coaching opportunities and encouragement to focus on the role of reflection in developing practice (Beck et al., 2016). While much progress was made, many aspects still need to be realised if the system is to truly be world-class (Kennedy & Beck 2018).

1.7 The Role of the General Teaching Council for Scotland

The GTCS has a fundamental role in supporting the education and learning of teachers throughout Scotland (GTCS, 2012). The GTCS view successful teacher learning as a way of building capacity and pedagogical expertise to promote educational change (GTCS, 2019). They suggest that when teachers engage in positive learning experiences, they are more likely to deliver high-quality teaching that will help to improve outcomes and reduce the poverty-related attainment gap (GTCS, 2019). Such opportunities can take the form of reading or research, an inquiry project, engaging in dialogue with stakeholders, as well as peer observations, further academic study, or gaining additional qualifications (GTCS, 2019). Learning for teachers, according to the GTCS, is a key driver in the pursuit of enacting high-quality teaching and learning that will ultimately impact positively on learner outcomes (Kennedy & Beck, 2018).

1.7.1 Professional Standards for Teachers

The Professional Standards were created by the GTCS as a blueprint for teachers across their career. At the time of the investigation, there were three sets of Professional Standards created in 2012, updated in 2021 (GTCS, 2021): the Standard for Registration, Standard for Career-Long Professional Learning and Standard for Leadership and Management (GTCS, 2021). The Standards encompass five levels, from Provisional Registration for student teachers to Middle and School Leaders. The Standards were designed to support teachers at all levels to identify and focus their learning in a personal way, meaning that learning would be collaborative, grounded in context and from teachers' current knowledge and skills. Therefore, the learning would be relevant to and supported by impact being evidenced in the classroom (GTCS, 2021).

1.7.1.1 The Standard for CLPL

The Standard for CLPL aimed to support the development of reflective and enquiring professionals able to make impactful decisions on their practice, thereby enhancing the learning experiences for pupils (GTCS, 2021). It is unique as it does not stand as a competency framework; rather, it was designed to support teachers to develop and improve practice (Kennedy & Beck, 2018). There is a focus on the professional 'way of being' at the heart of the revised Standards, creating an "aspirational and developmental framework for teachers" (GTCS, 2021, p. 3). This promotes a culture of learning at all levels in all schools, where teachers are encouraged to use the Standard to support their learning with autonomy and relevance, "As they progress through their careers this Standard will help them to identify, plan and develop their own professional learning needs and to ensure continuing development of professional practice" (GTCS, 2012, p. 2). This description of the Standard for CLPL parallels that of professions such as medicine, where there is an expectation that practice is honed and developed over time to the highest level (Antonelli & Livingstone, 2012; Lampert, 2012).

The focus is on equipping teachers to respond to the changing world and pupil needs, highlighting the value that quality learning experiences can have on developing expert teachers who can effect change (GTCS, 2019). This means that teachers can analyse their practice and reflect on its impact before considering future decision-making to impact positively on learner outcomes. This requires teachers to teach responsively to the needs of pupils and make pedagogical decisions based on the information they receive and use this to determine next steps for teaching, placing them as a leader of their own learning.

1.8 International Context

The Organisation for Economic Cooperation and Development (OECD) (2016) state that harnessing teacher learning to raise standards in schools is part of a wider global agenda to promote economic productivity and stability for the future. Such a perspective is commonplace in policy and legislation in the minority world (Fraser et al., 2007), with the global agenda for raising teacher quality being an international field (Darling-Hammond et al., 2017; Fraser, 2017; Kennedy, 2015).

Campbell (2017) discusses approaches to teacher learning and how this relates to Canada's education system and global debates on school improvement. Campbell (2017) outlines where inequalities exist and are perpetuated by the school system, which is a concern for school leaders. The need to support high quality outcomes for children and tackle these inequalities brings the role of the teacher into play, because "the quality of an education system cannot exceed the quality of its teachers" (Barber & Mourshed, 2007, p. 16). The Canadian system, Campbell reports, has responded reasonably well to this challenge historically, in terms of official statistics and rankings; however, there is still disparity within Canada as a nation. Campbell (2017) explored what effective teacher learning encompassed to make it a quality experience and identified the following factors: it must be evidence-informed; contain relevant subject-specific knowledge; focus on pupil outcomes; balance teacher voice and "system coherence" (p. 12); and implementation must be "active and visible" (p. 13), involving an element of collaboration and sharing, embedded in day-to-day classroom life. To be sustainable, it needs to be an ongoing process, it needs to be supported through resources, and be underpinned by school leaders' support and engagement, features reflected within the GTCS documentation (GTCS, 2021).

1.9 Context Summary

This thesis documents three Scottish primary teachers' learning experiences within a CLPL intervention, designed to illuminate Teacher Noticing. It explores the impact of a teacher learning intervention on their Noticing abilities and how this impact can be represented on two frameworks, with the aim of providing an evaluation on the new MTN. The intervention took place during the school year 2018/2019; all three participants were full-time primary teachers in different schools within one local authority.

The context for this intervention sits within a complex political environment. On an international level, there is a drive to raise standards, improve outcomes and raise achievement in schools. At national level, the political landscape promotes Excellence and Equity (SG, 2016) and the need to raise quality to close the attainment gap and raise standards. At school level there is a need to drive forward the initiatives in balance with the context of the school, a diverse pupil population, and teachers from different backgrounds with different experiences, knowledge, and skills.

1.10 Teacher Learning: Terms and Methods

Terminology relating to professional learning is contested, with a range of definitions and terms, each with associated meanings, focus, and emphasis (Lightfoot, 2019), many of which overlap and are used interchangeably (Altun, 2011). Moreover, as terminology developed so did approaches to implementation. This section outlines the terminology I will use in this thesis.

As teacher learning is crucial to school success (Tay et al., 2023), it is possible to conclude that there must be a shared understanding of what this means. Yet Coffield

(2000) states the problem with the discourse around teacher learning is that it is filled with "conceptual vagueness" (p. 3), meaning that there is often an assumption that all who come to the literature have a similar worldview and a shared concept of the terminology used.

Kennedy (2019) criticises that while the volume of learning opportunities has increased, what the benefits are for teachers and pupils, as well as how the impact is measured needs to be addressed…" Dependent upon who identifies the needs, to what purpose and what end, different priorities could be driven forward and implemented within the classroom. For example, a local authority could require all schools to implement a particular reading scheme as the data shows that reading across the authority is low overall. One school required to implement the scheme already has strong results, but many pupils have been struggling with their well-being. This can result in the time being directed outside of the needs and context of the school. Furthermore,

> […] the emphasis on teachers at the centre of educational improvement has proven to be a mixed blessing with divergent views on whether teachers should be the subjects of external changes—for example, with the imposition of teacher performance measurement and evaluations—or the agents of change with opportunities for teachers themselves to develop and exercise their collective professional judgement (Lieberman et al., 2017, p. 11).

Fisher (2003) states that the needs of teachers are often identified at the policy and national levels by those outwith the context of day-to-day teaching in schools where educational initiatives are highly linked with political drivers such as the use of an accredited phonics scheme (Department for Education, 2021). Kim et al. (2019) share a similar sentiment, that the political nature of educational initiatives impacts

on teacher learning as teachers are seen as delivery agents of the initiatives of those in charge. This refers to courses with a pre-determined outcome, designed without teacher consultation. It has been argued that this represents an approach to teacher learning 'done to' teachers, who are passive recipients of the changes in pedagogy and practice which are often policy-led (Kennedy & Beck, 2018). This could arguably be a positive approach, in line with the Scottish Government's National Improvement Framework (SG, 2016a), that all children should have the same opportunity to succeed. When compared with the mandatory phonics scheme in England, this conceptualisation can be problematic.

To support teacher learning on a large scale, it was commonplace to see learning experiences delivered *en masse* during twilight sessions, training days and inset events (Davis, 1975). This model is largely described as a transmission model, with the 'expert' delivering knowledge to the 'novice' to then apply in their own setting (Sailors, 2008), favoured for its efficiency, reaching a large number of people in a cost-effective way (Eun, 2011). Kennedy (2014) highlights the constraints of the model, namely, a lack of individualisation, with the standardisation of learning overshadowing the autonomy that teachers have to identify their own learning needs. By way of evidence, Clarke and Hollingsworth (2002) found that event style approaches which are organised for teachers are unlikely to foster transformative change, whilst Sailors (2008) identified that when enacted, attendees forget 90% of the delivered content. It has been suggested that this is because learning in this way lacks connection to classroom life and the practical 'doing' of teaching (Eun, 2011).

The most common terms evidenced in the literature explored include, 'workplace learning', 'professional learning', 'continuing professional development', 'professional development' (Ventista & Brown, 2023). Recognising the language

used within the definitions of teacher learning is important as it has implications for what it looks like for teachers. One significant example of this is the use of the terms 'teacher learning' versus 'teacher training'. Teacher learning implies a process of growth, developing new knowledge, skills or perspectives that enhance teaching and learning (Guerriero, 2014). This can be contrasted to teacher training, which implies a more transmissive model where teachers acquire a pre-determined knowledge or skill generally identified for them by either a manager or possibly local authority staff (Krolak-Schwerdt et al., 2014). The role of the teacher looks different in both terms because teacher training indicates a more passive role in that they are trained by an expert in a more performative task whereas teacher learning brings a more active role for the teacher. This demonstrates that learning and training, while concerned with the same subject area, have nuanced differences in what they promote and why.

Eraut (1977) defines professional development as "the natural process of professional growth in which a teacher gradually acquires confidence, gains new perspectives, increases in knowledge, discovers new methods and takes on new roles" (p. 10). This development centres on three factors: teacher (including their knowledge and experience); context of their school; and the professional world surrounding them, promoting a person-centred, contextualised way for teachers to learn (Eraut, 1977). An example of this is when teachers can identify their own learning focus, such as exploring the use of drama to support writing, identified by the teacher from the school demographic as many pupils have not experienced real-life writing contexts. This description could easily sit in contrast to the former term, encouraging a shift from *en masse* delivered learning, to a more on-going, person-centred process, where the role of the teacher is more active. One might conclude

that this definition would support a different method of enacting teacher learning. Robinson (2010) describes teacher learning as a process as opposed to an event, where learning is activated (Wilson & Berne, 1999). A 'process' conceptualisation aligns with Teacher Noticing.

In contrast, Hannay et al. (2006) define professional learning as "individuals taking charge of and responsibility for their own practice" (p. 15). It is self-directed, an ongoing venture and more relatable and relevant to everyday teaching practice (Easton 2008; Hannay et al., 2006). Clarke et al. (2012) propose that the shift in terminology supports a more teacher-centred approach to learning. They argue this is the first step to supporting meaningful teacher learning. The second step, they argue is, "understanding that professional learning 'in context' is the only learning that changes classroom instruction" (p. 25) because it is in the application of learning to the real-life context that brings it to life for the teacher and pupils. Within the classroom setting, learning becomes activated where the teacher can see the impact, reflect, and make future decisions. Therefore, teacher learning becomes inextricably connected with teachers' real experiences in the classroom and does not a have a set endpoint. In this respect, it is still connected with teachers improving their practice, but what that improvement looks like and what the end-goal is can be regarded as a more individual pursuit. Both terms seem to suggest similar methods and goals.

1.11 Teacher Learning: A Working Definition

Within my initial search I connected with the definition provided by Middlewood et al. (2005) who states that teacher learning is "a process of self-development leading to personal growth as well as development of skills and knowledge that facilitates the education of young people" (p. 64). This incorporates the need for both the individual to be actively involved in their learning, and the need to develop

knowledge, skills and practice that is needed to enhance pupils' learning. It also shows that learning takes place in a way that promotes improvement over benchmarking but also helps to positively impact on pupil learning experiences. I do however identify a tension with the use of development, whereby an externally derived endpoint is implied.

I hold that all teachers are individuals with their own needs, strengths and areas for development. Therefore, uniformity in learning outcomes will never be achieved and should not be the aim. I recognise that national and school-level learning is appropriate in key areas such mental health education, but the crucial part is how the learning is delivered and how the impact is measured. It could be incredibly refreshing for teacher learning to support all teachers to be the best they can be. I therefore offer my own definition:

> Teacher Learning is an experience, which can be long or short, that shapes teachers' practice (their knowledge, understanding and skills) and their perspectives (a personal, affective dimension). It parallels pupil learning and includes experimenting, reflecting and metacognition. When successful, it can transform what teachers do, how they do it, and why they do it. It regards the teacher as an autonomous, creative, problem-solver, who is empowered to engage in experiences that stimulate thinking and change for them and their pupils.

While extensive, I want my definition to encompass all the aspects I think are important: the combination of skills and personal learning, the parallels with how learners learn, and the potential that teacher learning has to help Scotland become 'The Best Place In The World To Grow Up (SG, 2016).

2 Literature Review

The aim of this investigation is to explore a new multidimensional representation of Teacher Noticing which demonstrates the impact of a learning intervention on three Scottish primary teachers.

This chapter reflects on the issues related to the investigation and maps how previous research has influenced and informed the present investigation. It seeks to build understanding of the importance of Teacher Noticing and how it can be supported and represented. I consider key literature within the field, how it relates to teacher learning, and how it develops, followed by an evaluation of the current frameworks used to represent it.

The structure of this chapter explores answers to the key questions at the centre of this study before providing an overview for Teacher Noticing:

1. Why is teacher learning important?

2. How do teachers learn?

3. What makes teacher learning successful?

4. An overview of Teacher Noticing

   o   How does Teacher Noticing support teacher learning?

   o   How does Noticing develop?

   o   How does previous research inform the field?

   o   An evaluation of Teacher Noticing

2.1 Why Is Teacher Learning Important?

There is broad agreement that what teachers do matters (Alvunger et al., 2017; Mushayikwa & Lubben, 2009; Sugrue, 2004). Jan (2017), Kim et al. (2019) and

Lingard (2009) highlight the importance of 'teachers as learners' as a significant facilitator of the changes required to support a 21st century, world-class education system, where children leave school prepared for the future.

Tay et al. (2023) state that teacher learning is a vehicle for facilitating transformational change in the classroom and their findings show that teachers have a significant influence on the learning and achievement of their pupils. Teacher quality has been shown to correlate to pupil outcomes (Steeg, 2016). However, Steeg (2016) points out that what is not as clear is what the characteristics are that make teachers better because "A lack of knowledge about effective teacher characteristics and practices is problematic for policymakers and school leaders that aim to improve and reward teacher quality" (p. 420).

As Burgess (2019) identifies, the quality of teaching is regarded as one of the most significant influences on children's achievement because it is the biggest factor in schools which can be influenced. This is the case because factors such as family circumstance and early life experiences are more challenging for schools to address. Therefore, of the factors that can be controlled, the learning experiences which children have in the classroom are vitally important. Jan (2017) further identifies that the most influential factor for pupil achievement is the teacher, and therefore how they learn is of paramount importance. This influence has led to a sustained focus on what teachers teach and how they teach it (Marcos & Tillema, 2006; Pianta et al., 2009).

There is consensus to be found in teachers' motivations as research has shown that the main motivating factor for those entering the profession is the desire to improve outcomes for children and to make a difference (Fokkens-Bruinsma & Canrinus, 2014; Kane & Mallon, 2006). Fray and Gore's (2018) review of literature identifies

three main reasons for teachers to enter the profession: altruism, intrinsic, and extrinsic motivation. Crucially, altruism, which supports the desire to make a positive impact on a child's education, was the most prominent reason found (Fray & Gore, 2018). As Young (2007) reports, "Every teacher I have met is the best teacher they know how to be" (p. 5) showing that for many, there is a genuine motivation to be a 'good' teacher. Interestingly, Reeves and Forde (2004) also found that most teachers in their investigation understood being a better teacher to mean improving outcomes for pupils, showing that the causality that is reported within key publications and directives, is also felt, at least by some, 'on the ground' too.

In sum, teacher learning could support the capacity of teachers to provide pupils with the best possible experiences, enhancing their classroom experience, and ultimately raising outcomes to secure the stability of school improvement and that of society (Kim et al., 2019). It offers the potential for high impact, underpinned by teachers' motivation to make a positive difference in pupils' learning.

2.2 How Do Teachers Learn?

The search to understand how teachers learn is indeed, as described by Loughran (2006), the 'holy grail'. Over time, the answer to how teachers learn has been met with differing perspectives and possibilities, and yet a definitive answer would be extremely helpful for those delivering and evaluating teacher learning. Clandinin and Husu (2019) state that teacher learning has failed to gain enough focus and attention in research. In the recent past, pupil learning has been a huge focus in schools and there was little attention paid to teacher learning (Beijaard et al., 2007, p. 105); however, in the last ten years there has been a shift towards this (Campbell, 2017). While there is a growing body of research exploring what teachers should learn and

how, there is still a gap in the research to explore how the impact of teacher learning can be demonstrated in a meaningful way (Guerriero, 2014).

Hollingsworth and Clarke (2017) highlight that the main focus for researchers and leaders is to "understand how teachers best learn to develop and refine their practice" (p. 458). This, they argue, is a highly complex process that is challenging to understand. Black and Wiliam (1998), some decades prior, suggest that the classroom is a 'black box', with a function-machine process whereby the input and output are evident, but what happens inside is somewhat of a mystery. They wanted to explore how to improve what children achieve and proposed that the answer lay in making the inside of the box work more effectively. They found that teachers do not take up approaches or strategies, no matter how good they look, if they must translate them into their own practice independently. Rather, they require lots of living examples to experience the approach 'in action,' where it feels real and 'do-able' for them (Black & William, 1998). This, they report, helps them to problematise their own practice. Aligned with this view, González et al. (2005) and Menter and Flores (2021) state that teachers need to be able to take conceptual knowledge and apply it within their own setting, wherein the 'doing' of teaching brings the theory into the classroom and the development of teaching practices support reflection, which in turn generates learning.

Kim et al. (2019) argue that in order to see teachers as learners it is important "that the learning we want to see in our children is taking place with our teachers" (p. 100). A decade prior, Donovan et al. (1999) analysed findings from a wealth of studies exploring how adults and children learn, concluding that there is no difference. They argue that all learning must be learner-centred, including previous learning, cultural and family practices, background knowledge, values, beliefs, and

perceptions (Donovan et al., 1999). Equally important is the learning context, understanding the environment where the learning takes place, its social nature and connection to the wider world. Similar findings were reported by Stoll et al. (2012) when exploring effective learning principles across existing research. They identified nine characteristics including: that effective learning has a clear end goal or point, is based on individual needs, involves an inquiry approach and is collaborative in nature. Although they did not think that these effective learning principles would be the same for teachers and pupils, the key features they identified can be paralleled within effective learning for pupils. Kennedy (2011) reports that often the approaches taken to deliver teacher learning are in direct contradiction to the principles that make for effective learning for pupils and that this could go some way to explaining why so many CLPL experiences fail to have the throughput and impact on teachers and pupils in classrooms.

According to Guskey (2000), homogeneity in professional learning is difficult to achieve and impossible to evidence. This is because learning is personal, so it would be impossible for the same experience to produce the same result for individual teachers (Kim et al., 2019). Similarly, Eun (2011) identifies that the same professional learning activity will have a different effect on teachers based on factors such as their background, development needs, highlighting the importance of the individual and their experiences. Rogoff (2003) argues the nature of teacher learning is a variable which is further compounded through the nature of individual teachers working in individual contexts, making it a deeply personal and individual pursuit. In this way, "Teaching practice, therefore, both shapes teachers' conceptual frameworks and is shaped by them" (p. 11). More recently, Tasler and Dale (2021) present a conceptual framework to represent this. They show a series of overlapping

circles which they call 'spaces.' The three spaces are: teacher, student, and place. The 'third space' is where the spaces intersect, where learning, growth and transformation take place and, crucially, the spaces "influence – and are influenced by – each other" (p. 3). While a new representation, this was considered decades prior. Take the following example within mathematics, studies show that as teachers become more experienced undertaking inquiry type activities, pupil learning experiences improved and therefore teachers thought differently and re-categorised what they classed as effective mathematics teaching (Basit, 2003; Earl et al. 2003). Research has also shown that as teachers become more involved in the learning process themselves, they can start to consider their practice and pedagogical decisions more widely (Guerriero, 2014). In this way, teachers should use this to question whether they are indeed becoming 'better' and what this means for them and their pupils (Davis & Sumara, 2003).

2.3 What Makes Teacher Learning Successful?

2.3.1 Formal and Informal Learning Experiences

Livingstone (1999) defines formal learning as "intentional learning which takes place in formal settings established for that purpose (e.g., classrooms, lecture halls, seminar spaces, etc.), usually institutionally sponsored and formally structured (lectures, courses of study, curriculum, teachers, etc.)". In contrast, "explicit informal learning is distinguished from everyday perceptions, general socialization and more tacit informal learning by people's own conscious identification of the activity as significant learning" (Livingstone, 1999, pp. 3-4).

The literature on teacher learning readily reports on formal learning experiences for teachers. By selecting desirable practices, isolating these, and encouraging teachers

to implement these in the same way, a standard level of practice which is high-quality is created; the reality, however, shows limited, less impactful results (Campbell, 2017). What is often overlooked is the role that informal learning experiences play, with research on the subject severely limited (Hoekstra et al., 2009). Informal learning experiences have been found to impact positively on pupil achievement (Huang et al., 2020) and therefore should be regarded with the same importance as formal learning experiences for teachers. Kyndt et al. (2016) report that teachers felt that informal experiences have a greater influence on their professional actions than formal learning experiences. The value of informal learning is evidenced by Hoekstra et al. (2007) who wanted to find out why some teachers struggle implementing new policy and government initiatives and directives. They found that the teachers who embraced the changes fully were the ones who "experimented in their classrooms, received new ideas from colleagues and engaged in meaningful reflection" (Clarke et al., 2012, p. 155).

Informal learning opportunities also present challenges because they are undirected, unregulated, and often unsupported (Riverin & Stacey, 2008). Riverin and Stacey (2008) caution that for many, exposure and engagement in these types of informal learning experiences come from outwith their own context, such as forums, blogs and social media platforms and can lead to information overload, where teachers become overwhelmed with the opinions and ideas of others. It is suggested that this leaves teachers without support to moderate the information they access as well as the quality of what they read (Barab et al., 2000). This could lead teachers to implement new practices that do not contain appropriate theory, knowledge, or support, meaning that if implemented, they may not be representative of that practice nor have the desired impact.

Colley et al. (2003) advocate that informal and formal learning should not be seen as oppositional. Rather, both concepts exist on a continuum, meaning that a successful experience involves aspects of formal and informal learning combined (Sawchuk, 2008).

2.3.2 The Role of Metacognition

Metacognition can be described as the process of "learning to learn" (Portilho & Medina, 2016, p. 2). It is complex as it requires the individual to develop an awareness of self and transform how they act in a given context (Alvunger et al. 2017). According to Hattie (2009) "metacognition is an essential component of teacher learning. The more the student becomes the teacher and the more the teacher becomes the learner, then the more successful are the outcomes" (p. 25). The ability of teachers to self-regulate their own learning is essential for their career-long learning (Kramarski & Michalsky, 2009). Moreover, "By becoming aware of oneself, one gains the ability to analyse the requirements of the task to be performed and relate it to the reality that presents itself" (Portilho & Medina, 2016, p. 2). This places metacognition as a key action which helps learners to observe, reflect and analyse, although it is highly complex and difficult to demonstrate (Scott & Levy, 2013).

Bransford et al. (2006) report that applying metacognition to teacher learning helps place teachers as active agents in their own learning so that they become self-aware. This is crucial as it seems to tap into an aspect which teacher learning often does not substantiate in more formal, isolated learning experiences. Portilho and Medina (2015) argue that metacognition supports a space for teachers to reflect on how they learn, and, therefore, how they teach to strengthen their pedagogical practices with an increased awareness of self. This could help teachers to empower themselves as

leaders of their own learning. Portilho and Medina's (2015) results show that using metacognition for teacher learning can provide teachers with the space to listen and learn with their peers in collaborative discussion, helping them to reflect professionally on their effectiveness in terms of their pedagogical choices. The role of discussion was key, the conversations which took place and the realisation for teachers in becoming aware of how they learn and teach. At the highest level, teachers were able to reflect on what they learned and the value of the experience as well as how they made pedagogical choices that meet the needs of their learners using what they see and experience every day as the start point (Portilho & Medina, 2015).

Wall and Hall (2016) built upon the project *Learning to Learn in Schools and Further Education* (Higgins et al. 2007; Wall et al. 2010) suggesting that within the project teachers enacted something metacognitive. They sought to investigate what was taking place by creating a model for teachers' metacognitive development, broken down into five cycles, from procedural to critical metacognition to practitioner enquiry through action research. The results were successful; they outline a progressiveness which they were able to evidence in the teachers who took part in *Learning to Learn*, which develops from teachers becoming aware of learning as a process, to shifting reflecting towards taking strategic action to the highest level of critical thinking where the teacher builds up their own theories of learning, a shift from pondering 'how' to exploring 'why' (Wall & Hall, 2016). They conclude that an inquiry process which promotes reflection and helps teachers to think and therefore act strategically based on the conclusions they draw is essential.

It seems reasonable to conclude the teacher metacognition poses a significant avenue to support teacher learning and suggests what it looks like when it is taking place.

The importance of 'learning to learn' underpinned by criticality and problem solving may lead to a learning experience which is more likely to impact positively on learner experiences.

2.3.3 The Role of Reflection

Reflection is regarded as an effective way to help teachers monitor their own development at all points in their career (Huang et al., 2020). The idea is that if teachers are unconnected to their practice, and are unable to explore it, they will be unable to improve it; therefore, reflection should be regarded as the basis for learning (Korthagen 2017). Reflection in this sense helps teachers to take a step back with a critical eye on what they do, why they do it, and what the impact of this is on themselves and their class (Tay et al., 2023). This would help teachers to engage with their practice, becoming connected and empowered critical thinkers. Furthermore, teachers should reflect on how their practice links with their own values and beliefs about teaching and learning, meaning they would also consider their own assumptions (Cochran-Smith & Lytle, 1993). This, in turn, would support teachers to think openly and creatively about their pedagogical decision-making and its impact both on their own and pupils' learning.

Dewey (1910) argues that reflection is a cognitive process. It is active, a problem-solving activity whereby chains of thoughts are linked together and given meaning before forming conclusions, solutions and next steps (Sellers, 2013). Korthagen (2017) describes different levels of reflection exemplified through a teacher he calls Susan. She was reflecting on her practice and was struggling with pupil behaviour, concluding that she needed to be stricter in the next lesson. He proposes that she jumped, making a quick analysis that did not consider all factors at play, for example, the level of demand in the task and the pace of the lesson. Korthagen

(2017) suggests that this typifies what happens in many classrooms with teachers making solutions to take into the next lesson that do not address the real issue or are purely made by assessment at a superficial level. It can be the case that when teachers use the misinformation to reflect on a new practice, they can regard the reflection as unhelpful or not useful when in fact they are acting on information that is not accurate (Korthagen, 2017). This shows how teachers can, over time, find reflection a pointless task, when in fact the focus on what is being noticed and how it is analysed could be the main part of the problem. Korthagen (2017) argues that a deeper understanding for teachers of what is going on in lessons is needed to support real change; however, teachers need time and the skills to do so.

Timperley et al. (2007) found that some of the greatest gains in terms of outcomes were observed when teachers had reflected and felt that their practice was not providing the best learning experiences for pupils. This 'reflection and action' cycle helps teachers to respond to the ever-changing challenges they face in the classroom, therefore raising the importance that they, too, continue to learn. This action cycle brings to the fore the role of inquiry. Tay et al. (2023) argue that teachers, when learning from and with each other, were able to develop inclusive practices, as well as practices that supported their responsiveness to pupils' individual learning needs (Silver & Png, 2016).

2.3.4 The Role of Inquiry

Teacher inquiry is readily associated with teachers undertaking a small-scale action-research project in their own classroom, exploring an aspect of their own practice (Ritchie, 2006), "a process of systematic, rigorous and critical reflection about professional practice, and the contexts in which it occurs, in ways that question taken-for-granted assumptions. Its purpose is to inform decision-making for action"

(Reid, 2004, p. 4). According to Menter et al. (2011), the process is a 'finding out' or experimental activity, undertaken with sound reasoning supported by theory or research. Inquiry can help to create inquiring professionals who adopt the process into everyday practice to become active and empowered in their own pedagogical decisions (Katwijk et al., 2022), allowing teachers to problematise their own practice and take positive steps to implement and evaluate changes (Carr & Kemmis, 1986). Within the inquiry, findings are shared to enhance reflection beyond the individual to support wider practitioner learning. Robinson (2010) regards inquiry as an approach which facilitates the opportunity to pause, reflect, and evaluate on current practice, providing an opportunity to reflect critically on practice at a high level, giving teachers self-direction in their own learning. Others concur that until teachers become active contributors and leaders of developing their own practice, the sustainable and impactful development opportunities desired will remain locked (Baumfield et al., 2008; Cochran-Smith & Lytle, 2009).

Cochran-Smith and Lytle (2009) contribute 'Inquiry as Stance', which further supports the importance of practitioner inquiry to help teachers access higher levels of critical thinking and problem solve their own challenges as empowered teachers. They argue that inquiry as a stance fits well within a cycle of action research, asking questions, observing, and taking action. Inquiry, when it is collaborative, can allow teachers to "make sense of their experiences in the classroom, learn from those experiences, and draw upon perspectives of colleagues to enhance their teaching and their students' learning" (Weinbaum et al., 2004, p. 3).

2.4 Teacher Noticing

The field of Teacher Noticing lies at the heart of understanding how teachers make sense of what is going on in the classroom. Sherin and Star (2011) share that teachers

are faced with a wealth of information within the classroom, and therefore need to decide what to pay attention to and make use of, requiring real-time pedagogical decision making (Jacobs et al., 2010). It can therefore be difficult for teachers to choose what to filter out and what to focus on, and challenging for them to express how they make sense of and respond to classroom events (Jacobs, 2017; Sherin et al., 2011). Miller (2011) shows that many teachers are simply overwhelmed with the range of data available in the classroom. Data pouring in from what teachers see and hear can result in 'cognitive tunnelling', whereby teachers actively narrow what they focus on (Miller, 2011). Erickson (2011) states that when teachers become overwhelmed with data and information they tend to focus on bigger indications at whole-class level in what is referred to as 'batch processing', where teachers teach from a class-view as opposed to building up a picture from individuals. This could be problematic as it means that instead of looking at how teaching is tailored to learners' needs, it becomes pitched and paced to a general level, failing to match those who require further support or challenge. Resulting in what teachers see as evidence, and what they use to form conclusions, are not always the observations that provide them with the evidence they need to make solid inferences about pupil learning, leading to observations that have been described as superficial, either focusing on children's behaviours or the class generally, without looking at learning more specifically (Star & Strickland, 2008; Star et al., 2011). In sum, this can lead to unhelpful generalisations that are supported by inaccurate evidence, giving a false sense of what qualifies as an effective or successful lesson (Lloyd & Mukherjee, 2012; Loughran, 2002). This raises the consideration that if the information teachers use to base their 'in the moment' decisions is inaccurate, the consequences for maximising pupil learning could be significant over the course of a school year, let alone the duration of a child's education.

Windschitl et al. (2011) highlight the importance of teachers critically analysing their practice and having regular opportunities to reflect on their practice, connecting it to theory. The view is that they are therefore more likely to think actively and critically towards teaching, taking risks, being creative and trying new things (Darling-Hammond & Bransford, 2005). In turn, these skills help teachers to make thoughtful pedagogical choices which should lead to learning experiences more tailored to the learning needs of pupils.

Guerriero (2017) frames teaching as an experiment, where teachers learn, reflect, and analyse their practice. In this view, teaching is filled with learning based on the impact of what takes place in the classroom. Franke et al. (2001) identify that by honing in on learners' experiences, the learning experiences of both the pupils and the teacher is enhanced. Lampert's (2010) work also supports a link between reflecting on the relationship between teaching and learning, helping teachers to learn within and from their own teaching practice.

Crawford et al. (2005) shares that Noticing helps teachers to become the adaptive experts, able to recognise their own strengths and limitations and respond to this with flexibility because it is the response to what and how teachers notice that is considered the fundamental of teacher learning within the field, where teachers become reflective practitioners (Wei et al., 2023).

2.4.1 Definitions and Perspectives

The field of Noticing developed from psychology, with Erickson making significant contributions via teacher learning in the 1980s, driven to explore what teachers' pay attention to, and how, with the aim of understanding what teachers "look and listen for while they teach" (Erickson et al., 1986, p. ii). In a landmark study, Erickson

(1986) explored what early years teachers paid attention to in their teaching. The investigation took place in two contrasting environments, and with a mixture of teacher experiences. He found that there is merit in supporting teachers to explore their practice and the basis of their decision-making, ensuring that what teachers perceive to be happening reflects the reality. Interestingly, "experts are often distinguished as much by what they do not notice as by what they do [notice]" (Miller, 2011, p. 52).

Erickson (1986) highlighted one teacher's experience, a teacher who, when she observed a recording of her teaching, was surprised by what she saw as it paid little resemblance to how she experienced it. This had a profound impact, leading her to see her classroom events in a different way following engagement in the investigation. This frames Teacher Noticing as an active process, where teachers direct and pay attention (Erickson, 2011). Erickson (2011), in his in-depth synthesis of literature on Teacher Noticing, concludes that being able to evaluate the relationship between teaching and learning helps teachers to "put [what is going on in the classroom] all together" (p. 26). Connecting learning with classroom experience effectively supports teacher learning, linking Teacher Noticing with teachers' ability to provide appropriate, responsive instruction tailored to learners' needs (Gibson & Ross, 2016).

The concept of Teacher Noticing is closely linked with teachers' ability to provide appropriate, responsive instruction tailored to learners' needs (Gibson & Ross, 2016). A complex art, it requires highly skilled, adaptive, and knowledgeable professionals who have developed an awareness of what they notice and how they make sense of and use this information (Ellis & Simpson, 2020). In this way, "those researching Teacher Noticing ask what are, in some respects, primal questions of

teaching: Where do teachers look, what do they see, and what sense do they make of what they see?" (Sherin et al., 2011, p. 3). Research has shown that being able to notice and use this information is important in teacher competence as it can shape not only teaching practice, but also pupil learning (see, for example, Kersting et al., 2016; Weins et al., 2021). In this way, Teacher Noticing is regarded an important component of expert teaching (Jacobs & Spangler, 2017; Mason, 2002; Sherin & Van Es, 2005; Van Es & Sherin, 2010).

Teacher Noticing is still regarded as a developing field (Van Es & Sherin, 2021). To bring some clarity, Konig et al. (2022) in their systematic review identified four major perspectives on Teacher Noticing, outlined in summary below.

2.4.1.1 First Perspective

This is a discipline-specific perspective of Teacher Noticing as practices for raising teacher awareness (Konig et al., 2022). Created by Mason (2002) who defines professional Noticing as "what we do when we watch someone else acting professionally and become aware of something that they do which we think we could use ourselves" (p. 30). Mason (2002) found, within mathematics, that supporting teachers to learn to notice in deeper ways helps them develop their expertise, which can make them more effective in their role and help them to use their experiences to inform future pedagogical decisions. From this perspective, Noticing requires three things: "being present and sensitive in the moment, having a reason to act, and having a different act come to mind" (Mason, 2002, p. 1). It involves four interconnected actions: systematic reflection, recognition, preparing and noticing, and validating with others (Mason, 2002). Mason (2002) demonstrates that supporting teachers to learn to notice in deeper ways helps them develop their

expertise, which can make them more effective in their role and help them to use their experiences to inform future pedagogical decisions.

2.4.1.2 Second Perspective

This cognitive-psychological perspective centres on the cognitive processes behind Noticing, developed from the increased awareness of the role that pupil thinking has in teaching (Konig et al., 2022). Van Es and Sherin (2002) define Noticing as being able to identify *what* is important within classroom events, *connect* these to the wider principles of teaching and learning and then *reason* from those events, using what teachers know. In the landmark investigation, teachers observed videos of their practice and provided reflective responses. They found that Noticing requires two processes, attending to and making sense of classroom events (Sherin et al., 2011). Konig et al. (2022) note that a cognitive-psychological perspective recognises that teachers do not naturally notice, they need to learn what to pay attention to and why.

'Making sense' has been contested in definition, for example Jacobs et al. (2010) add the third process wherein teachers decide how to respond to what they have noticed. The concept of Teacher Noticing developed to include the interpretation of and responses to events in the classroom. The Professional Noticing Framework, developed within the field of mathematics as a way of unpicking 'in the moment' decision-making (Jacobs et al., 2010). The theory behind what Jacobs created was that Noticing is subjective and there are patterns across groups of people in terms of what they notice based on their 'vision'. They argue that learning to notice is part of how expertise develops within a profession, thereby placing Teacher Noticing as a professional skill to support expert teaching (Jacobs et al., 2010).

2.4.1.3 Third Perspective

This is a socio-cultural perspective of Teacher Noticing that draws on Goodwin's (1994) concept of Professional Vision, whereby "the ability to see a meaningful event is not a transparent, psychological process, but instead a socially situated activity" (Goodwin, 1994, p. 606). This concept did not develop from within the teaching profession and has largely been overlooked, in spite of the political influence over what successful school education looks like (Louie, 2018). Noticing is important in terms of leading educational reform through the lens of equity, whereby there are growing calls for reform through the inequality in educational outcomes and experiences of the most disadvantaged learners (Dominguez, 2019). This perspective developed into a multi-dimensional approach to Noticing for equity created by Van Es et al. (2022). This model actively encourages the awareness of teachers to notice in relation to pupils' cultural and historical background at the heart (Konig et al., 2022). Konig et al. (2022) therefore question whether this perspective can continue to stand alone in future.

2.4.1.4 Fourth Perspective

This is an expertise-related perspective, which builds upon the work of Berliner (2001, 2004) and relates Teacher Noticing to a component of expert teaching. He argues that teacher expertise develops through cognition and reflection based on their teaching and experiences. In this way, Teacher Noticing is linked with expert teaching. This perspective derives from the realm of teacher professionalisation, education and expertise (Konig et al., 2022); however, the exploration into teacher learning and expertise have been regarded "as precursors" to research within the field of Teacher Noticing (Lachner et al., 2016, p. 198).

Berliner (1988) explored teaching expertise within a range of stages, from novice to expert. Although Teacher Noticing is not specifically mentioned, parallels can be seen in relation to how teachers' behaviour and performance develop as they progress through the stages in the development of their expertise (Konig et al., 2022). For example, novice teachers struggle to identify noteworthy events and undertake limited analysis to adapt instruction for the future, whereas expert teachers are more able to adapt their practice to meet the needs of learners. The underlying abilities to interpret classroom events, make sense of them and use this information are, within this perspective, the cognitive processes which teachers develop and represent clear connections within the field of Teacher Noticing (Konig et al., 2022).

In summary, each perspective does not sit in isolation, there are many overlaps and commonalities within these perspectives, the waters are extremely muddy with different definitions, theories, and perspectives available (Konig et al., 2022). Within their review Konig et al. (2002) found that the most featured perspective within the literature is the cognitive-psychological.

2.4.2 Developing Noticing Ability

Attention, therefore, falls to how teachers develop the ability to notice. Mason (2002) describes that in all professions, people are sensitised to notice in a particular way. Because teachers require extended opportunities to focus on their practice and make connections between teaching and learning, Noticing is often considered to develop over time (Mason, 2002). Within the literature, Noticing is described as a "learnable practice" (Jacobs & Spangler, 2017, p. 772) and is therefore achievable by all, making Teacher Noticing a professional learning approach that could be impactful for all teachers. Star and Strickland (2008) found that student teachers developed their Noticing abilities in as little as one semester. It is worthy of note that

while research has shown that Noticing can be learned (Star et al., 2011; Stockero, 2014), it has also shown that this does not mean that it comes naturally (Star & Strickland, 2008). Goleman's (1985) investigation shows that to notice is a complex skill that is challenging to master as it involves teachers engaging in a high level of critical thinking, reflecting upon their classroom reality, and problematising their practice. To support this, teachers need to be given autonomy, underpinned with knowledge on how to problematise their practice, gaining new perspectives and approaching practice in new ways (Ellis & Simpson, 2020).

Taking the most prominent cognitive-psychology perspective from the early conceptualisation, Van Es and Sherin (2002) state that Teacher Noticing has two core components: *attending* to what is taking place and *interpreting* this information. Van Es and Sherin (2021) later revisited their concept, explaining that there were calls for a further added element from previous research (see: Blömeke et al., 2015; Jacobs et al., 2011; Reisman et al., 2020), also recognising that something was missing from their seminal work. They reconceptualised Teacher Noticing to involve a third element: *shaping*. Shaping builds upon the attending to and interpretation of classroom events to be an "emergent course of action in which a teacher centrally seeks to deepen their understanding of the child as they engage in ongoing interaction with that student" (Aukerman, & Aiello, 2023, p. 10). Shaping brings about a sense of intentionality, where the teacher is curious and "seeks to learn as well as to teach" (Aukerma & Aiello, 2023, p.10). In this way, shaping supports an active role of the teacher in Noticing within their environment, which offers further opportunities to observe and interpret classroom events (Van Es & Sherin, 2021). This conceptualisation has been generally accepted by others (see for example, Zeeb et al., 2023). Van Es and Sherin (2021) revisited their data and found evidence that

what teachers paid attention to shifted over the course of the investigation, for as teachers focused more on pupils' thinking, they paid less attention to more superficial observations. Moreover, in pre- and post-interviews, teachers' responses changed, they did not simply discuss the same points, they highlighted new questions and perspectives at the post-intervention stage than shared in the pre-intervention data. This, they argue, shows that teachers shift and reprioritise their attention within the classroom.

The most comprehensive evidence base for Teacher Noticing comes from the field of mathematics (Amador et al., 2021; Damrau, 2022). Research on Teacher Noticing has developed more gradually across the fields of science and literacy (Gibson & Ross, 2016; Luna & Sherin, 2017). This is because recent decades saw a significant rise in the volume of research exploring children's mathematical thinking, combined with a growing body of research on the role of the teacher within this (Jacobs et al., 2010). Jacobs and Spangler (2017) identify three main approaches to studying Teacher Noticing, these are: using practice captures such as video recordings and pupil work, using teachers' reflections such as interviews and diary entries, and undertaking observations of practice by researchers.

The first research outputs in the field were in relation to the learning of student teachers. Studies by Davis (2006), Davis and Smithey (2009) and Levin et al. (2009) have shown that student teachers can learn how to notice learner thinking when they have been taught how to. Research by Star and Strickland (2008) has shown that student Teacher Noticing can improve if supported and directed, over the course of a university semester, offering gains within a short timeframe. Research from previous studies supports the use of a framework as a particularly effective tool to support this

(Gelfuso & Dennis, 2014; Hiebert et al., 2007; Santagata & Angelici, 2010; Windschitl et al., 2012).

There have only been a few systematic reviews undertaken within the field; however, they have provided insight into previous connections and pitfalls in current research. In their review, Konig et al. (2022) found that most studies involve small sample sizes, which supports the individual nature of teachers' classroom experiences, but makes it challenging to capture any wider generalisations or conclusions from research. Interestingly, they also found that across studies, regardless of method and design, the most experienced teachers performed better than less experienced teachers. They say that this supports the narrative that Noticing fits with the development of teachers from novice to expert.

Amador et al. (2021) found that there is a distinct lack of longitudinal studies available within Teacher Noticing research, noting that generally research captures data over a short period of time, with a quarter of studies conducting a one-off, single instance data capture, making it difficult to get an accurate picture of how Noticing develops over time, not least over a teacher's career. Wei et al. (2023) recently undertook a bibliometric review, involving a statistical analysis of over 139 articles. They found that research has gradually increased over the years with most studies coming from the United States and generally western countries. They argue that there is a need for greater diversity to research beyond the field of mathematics and pre-service teachers, both of which have dominated the research field. Wei et al. (2023) conclude that the field is still very small and has many gaps and while findings are positive, more work needs to be done to affirm Teacher Noticing within the research community.

There are also cultural considerations within Teacher Noticing to consider, with a lack of international and cross-cultural studies being evident. Damrau et al. (2022) explored Teacher Noticing within mathematics, working with teachers from three countries: Australia, China and Germany. Within the investigation, teachers were given lesson plans to implement three lessons and three follow-up lessons (slightly enhanced for the Chinese teachers due to strict curriculum guidelines), with pre- and post-intervention interviews taking place to capture teachers' reflections. The findings show that each teachers' experience was unique but there was also a core commonality, specifically, that all teachers repeatedly over or underestimated their pupils' abilities, concluding that "what teachers noticed seemed to be influenced by their expectations of their students" (Damrau et al., 2022, p. 269), an interesting outcome from teachers teaching in very different environments.

Noticing can also play a role in creating more equitable classrooms. Roose et al. (2019) state that teachers need to respond to the increase in diversity within the classroom and exploring Noticing can help. They found that teacher beliefs are central to Noticing, influencing what they perceive within classroom events, and that where teachers value equitable learning environments, they are more likely to notice inclusive classroom components. They used video clips to illustrate changes in teachers' thinking, showing that exploring two different methods of pupil grouping sparked reflection and new perspectives when supported by a trained facilitator.

Aukerman and Aiello (2023) explored Teacher Noticing following the Covid-19 pandemic in response to the increased media attention on the learning that has been lost during the school closures. They argue, instead, that schools need to focus on what children bring, their "funds of knowledge" (Moll et al., 1992) and harness this to help all children achieve. They propose that there are four domains that are

essential for Teacher Noticing within a literacy context: children's emotions, funds of knowledge, relationships, and purposes. They found that these domains are significant in supporting high-quality, equitable practice as teachers develop their understanding across the four domains. They argue that these domains could help teachers focus on pupils' learning and experiences regardless of the subject area.

Van Es et al. (2017) observed implications for equity in four teachers' Noticing abilities within mathematics teaching: "teachers who promote equity not only engage in shared instructional practices but also demonstrate commonalities in terms of their noticing" (p.266). Key themes emerged from their research in relation to what teachers notice and how they use this information. Crucially, teachers all developed an understanding of what influences pupil status and positioning within the classroom, pupil groupings, ability and participation, and engagement within lessons. Also, all teachers who developed their Noticing abilities explored individual pupils' experiences and interests, and were able to use these in instruction.

> These teachers were acutely aware of who their students were as people - as individuals and as members of other communities (e.g., youth and cultural communities) - and they attended to students' culture and community as it played out during instruction. The teachers also noticed the energy and flow of the students and the class (Van Es et al., 2017, p. 266).

2.4.3 A Framework for Teacher Noticing

Davis (2006) and Levin et al. (2009) found that Teacher Noticing is most effectively supported when teachers are provided with a framework with which to analyse their lessons and inform future teaching, thereby providing the maximum opportunity to support their learning. A Framework for Learning to Notice Student Thinking, most

commonly known as the Learning to Notice Framework (LTNF) (Amador et al., 2021), was developed by Van Es (2011) to capture what and how teachers notice in relation to pupils' mathematical thinking, exploring what they observe, and how they reason with this information. Amador et al. (2021), in their review of student Teacher Noticing, highlight differing views on how it develops and how it is measured. They suggest the LTNF (Van Es, 2011) is among the most popular in current research. Van Es created an approach where teachers recorded and discussed their own practice with others using a three-part process:

> (a) identifying what is important or noteworthy about a classroom situation; (b) making connections between the specifics of classroom interactions and the broader principles of teaching and learning they represent; and (c) using what one knows about the context to reason about classroom interactions (Van Es & Sherin, 2008, p. 573).

Over several investigations, they were able to evidence that teachers can improve their Noticing ability by developing what and how they notice, and by developing more interpretive comments on what they have observed to make meaningful conclusions and inform future practice for the benefit of their pupils (Sherin & Han, 2004; Van Es & Sherin, 2008). Van Es (2011) mapped the Noticing of teachers, resulting in a framework consisting of two categories: what teachers notice and how teachers notice. This, she argues, best represents the nature of Teacher Noticing. The first element is concerned with who is the focus of the Noticing, for example, an individual, identified groups or the whole class. The second category measures how teachers notice, from general impressions to highlighting specific events and interactions as evidence and making wider connections to teaching, proposing solutions, and directing next steps.

Van Es (2011) also created a trajectory to chart the growth of teachers' ability to notice over time from novice to expert. Four Levels exist: Baseline, Mixed, Focused, and Extended Noticing. These levels combine what and the how teachers notice. Teachers progress through the Levels, becoming increasingly responsive to individual learners' needs and experiences, developing their practice to benefit their pupils (Van Es, 2011). She concludes that the *what* and the *how* are connected, and the Levels are generally the same across both categories. She evidences that as teachers become more expert in their Noticing, they can step back from practice and analyse the impact of their pedagogical decisions on pupil learning, and vice versa, as well as exploring pedagogical solutions to challenge and direct their own next steps (Van Es, 2011). Therefore, the LTNF (as demonstrated in Figure 1) provides a tool to help explore the impact of the professional learning experience in supporting teachers to think about their pedagogical decisions and approaches and the impact they have on them personally and their pupils.

| | Level 1 | Level 2 | Level 3 | Level 4 |
	Baseline	*Mixed*	*Focused*	*Extended*
What Teachers Notice	Attend to whole class environment, behaviour, and learning and to teacher pedagogy	Primarily attend to teacher pedagogy Begin to attend to particular students' mathematical thinking and behaviours	Attend to particular students' mathematical thinking	Attend to the relationship between particular students' mathematical thinking and between teaching strategies and student mathematical thinking
How Teachers Notice	Form general impressions of what occurred Provide descriptive and evaluative comments Provide little or no evidence to support analysis	Form general impressions and highlight noteworthy events Provide primarily evaluative with some interpretive comments Begin to refer to specific events and interactions as evidence	Highlight noteworthy events Provide interpretive comments Refer to specific events and interactions as evidence Elaborate on events and interactions	Highlight noteworthy events Provide interpretive comments Refer to specific events and interactions as evidence Make connections between events and principles of teaching and learning On the basis of interpretations, propose alternative pedagogical solutions

Figure 1 – The Learning to Notice Framework (Van Es, 2011)

Lee and Choy (2017) extended the LTNF into what they described as a Three-Point Matrix comparing what and how student teachers notice in their study based in the United States and Singapore. It was created within a mathematical context using a lesson-study approach with inquiry and reflection linked to pupil thinking. They identified three significant points: key points, difficult points and critical points, and

recorded in a table across three aspects: attending, making sense, and deciding. The first, describing the intended learning objective or goal for the lesson; the second, describing challenges or stumbling blocks children face within the lesson (including errors, misconceptions); and the third, considering how they could help children to overcome these errors to achieve successfully. They concluded that the three points within Lesson Study could help develop the field of Teacher Noticing as improvements were evident, yet teachers from the United States and Singapore "did not demonstrate an extended level of noticing" (Lee & Choy, 2017, p. 137). They recommend that the framework could be supported by questions or prompts as well as plans or lesson outlines to guide and direct Teacher Noticing.

2.4.4 Evaluation

There is growing evidence that calls into question the suitability of existing frameworks and methodologies within the field, and this threatens to undermine the potential of Teacher Noticing to represent teacher learning. For example, Kersting et al. (2016) state within their own investigation, that undertaking observations of teachers to make judgements on their Noticing abilities does not mean that the teachers are making the advances researchers observe, the measures limit the understanding of Noticing, and the measures are limited by said understanding. This can result in researchers making judgements on what they see without always having a connection to the individual's thoughts and rationale, which is valuable information needed to make a judgement.

The use of numerical data to represent teachers' experiences is dominant within the field. Scheiner (2016) argues that using a numerical scale falls short of accounting for the complexity of Teacher Noticing and is not a dynamic representation of this. Moreover, Sherin and Star (2011) explore how there is a complexity to the core

components of Noticing (Jacobs et al., 2010) but current thinking is too simplistic in understanding the dynamics at play of what is within an individual teacher's realm to notice, direct and respond to. They argue that the numerical levels do not help identify and explore the personal, affective dimensions of learning which are unique to each teacher and their worldview. These factors impact on teachers' ability to notice (Sherin & Star, 2011). They call for the creation of a new model for Teacher Noticing, stating that "as a field, we should work toward the development of a more complete model of how teachers make sense, in the moment, of complex classroom events" (p. 77).

In an article titled, *Teacher Noticing: Enlightening or Blinding*? Scheiner (2016) shares some words of caution for future research. He highlights that data is often coded into new or existing categories within these studies by the researcher, therefore, they are interpreted through the researchers' eyes. Sherin and Star (2011) caution that the judgements made during the categorisation are still that on the part of the researcher, from their perspective, not necessarily what the participant is actually experiencing. He draws attention to the work of Kersting et al. (2016) which exemplifies a 'chicken and egg' issue, the theoretical developments are limited by the measures to explore Noticing and the converse is also true. He argues that this has led to a focus on the observational elements within Noticing and an over-reliance on numerical data to demonstrate measurement. This, he argues, is troubling because to use a numerical scale to explain something this complex falls short of helping to fully understand the complexity of Noticing. So, "such a measure does not capture the interactions of activities and possible relationships between the dimensions being explored, thus omitting some qualitative detail" (Scheiner, 2016, p. 232).

Amador et al. (2020) add that there is such great variation in the methodological approaches taken within the research on Teacher Noticing that comparing results and drawing conclusions across studies becomes challenging. They recognise that there is commonality where studies use a framework for Teacher Noticing, for example, Jacobs et al. (2010), Mason (2002, 2011), and Van Es and Sherin (2006, 2008). However, there is a great deal of artistic licence involved in how researchers use various models. For example, how Noticing is defined and measured has become diluted over time, with some aspects branching off from original research lines leading to greater variation in the field, making it more difficult to build a consistent research base. While the LTNF has produced more real-life use and positive results than other frameworks overall (Amador et al., 2021), the approach is not without criticism. Wei et al. (2023) regard the LTNF as "too vague and open" (p. 2), which can make it challenging to apply. Konig et al. (2022) share that Teacher Noticing is a promising field, but the methods, design and foundations in the field are not secure. This view is supported by Sherin and Star (2011) who suggest that "as a field, we should work toward the development of a more complete model of how teachers make sense, in the moment, of complex classroom events" (p. 77). Scheiner (2016) hopes that a new model will be developed to take into account the shortfalls of the research so far, stating:

> we need to step out of intuitive frames that hide the complexities involved in Teacher Noticing… leaving many aspects of their interdependencies in the 'black box', unseen by researchers and educators and often understood only in isolation (p. 236).

Having undertaken a review of literature in the area of teacher learning, it was clear that there is much to be learned and understood about how teachers learn and how it

can be represented. I explored core components of successful teacher learning of learning such as reflection, inquiry, and metacognition, and found that the field of Teacher Noticing could provide a viable approach to represent the learning experiences of teachers. In doing so, I could begin to isolate high-level Noticing to better inform the field. Taking stock of the challenges presented in the literature, I identified what I believed to be a gap in the current research and sought to adapt the dominant framework from Van Es (2011) to design the Matrix for Teacher Noticing.

At the heart of this thesis lies one key research question: To what extent can the Matrix for Teacher Noticing represent the Noticing of primary teachers? To answer this research question, two sub-questions were created:

1. In what ways does the Matrix for Teacher Noticing illuminate Teachers Noticing abilities when compared with the Learning to Notice Framework (Van Es, 2011)?

2. What are the characteristics of high-level Teacher Noticing as presented by the Matrix for Teacher Noticing?

3 Methodology

3.1 Aims and Objectives

This chapter provides an overview of the research methods used in the investigation. I explore my own values, position of influence and employment in relation to the participants and their recruitment and examine how these factors impact upon my research design. I outline the reasoning behind my decision-making at all stages of the intervention including the collection, transcription, and analysis of data as well as the presentation of the findings. I share the ethical considerations as well as challenges and limitations of my design.

3.2 Approach

Reflexivity

Greenbank (2003) argues that research is not value-free; rather, researchers are influenced in their investigation by their own values. He developed three value categories:

> **Instrumental values** - what a person/researcher feels is the 'right' thing to do. These are the moral values. **Competency values** - what a person/researcher believes is the most effective way to go about doing something. **Terminal values** - a blend of the person/researcher's personal and social values in that they incorporate what they hope to achieve for themselves and their aspirations for how they wish society to operate (Greenbank, 2003, p. 791).

Using this as framework for my own thinking, I explored my own values, recognising that my own worldview impacted on all aspects of my research design.

Instrumental Values

My own instrumental values centre on the view that all children deserve the best educational experience. I believe that, morally, schools should be places for all children to learn. I think some children 'fit' more naturally with the sorts of learning and knowledge that schools support, whereas other children need schools to adapt to engage and access learning successfully. I argue that the skill for teachers is to work towards inclusive, equitable classroom practices that support all learners. I also passionately advocate for teacher learning, supporting teachers to become more critical, self-aware, reflective, and conscious in their pedagogical decision-making. I believe that achievement for all is the moral purpose of education, and the role of teacher learning is pivotal to ensuring all children have an equal chance to succeed.

Competency Values

My competency values demonstrate what I think this could look like and how this could be achieved. I think that schools need to embrace an inclusive ethos and be driven to support pupils from disadvantaged backgrounds both 'top-down' from leadership and 'bottom up' from class teachers. I think teachers should be supported to adapt teaching to learners' needs and experiences, helping them to become active and empowered in their curriculum design. I propose that teacher learning be regarded as an experience that is ongoing, context-specific, and deeply personal. I do not think that externally derived and programme-led learning experiences support the sort of higher-level reflection needed to support Noticing Teachers who are able to recognise and adapt their teaching based on the information they gather from pupils' experiences. I argue that there is a strong evidence basis for teacher learning to be regarded with the same principles as pupil learning.

Terminal Values

Combining my instrumental and competency values, I have my own perspective on how both values will be achieved. I propose that partnership needs to be evident between teachers, school leaders and local and national leaders. If pupils are considered as individuals with their own experiences, knowledges, and backgrounds, then teachers should be the same. Teachers need to be brought into the discussion on how to support their learning successfully and school leaders need to provide a balance of individual learning and collective progression of school improvement and national directives that are relevant to their own school context and, crucially, to their own teachers. I feel strongly that illuminating Teacher Noticing is a vehicle to achieve this success. However, I recognise that enacting this is complex and challenging, which I believe is mostly why professional learning activities fail to deliver sustained impact and transformational change.

Exploring my own values in this way helped me to determine my standpoint and to raise awareness of my influence within the research design. I came to recognise that I can never be removed or objective, but taking stock of my perspective would provide me with the best opportunity of minimising its interference.

Employment and Relationships

At the time of the investigation, I was working within a Scottish local authority in the central education team. The funding for my post came from the Scottish Attainment Challenge (SG, 2016b). My role was political in nature as my success was closely linked to the overall performance of schools across the region. My own values were challenged within this role for while I could work with schools creatively, the accountability came from the success and progress made by schools

overall. Specifically, I held responsibility for literacy. I worked directly with school leaders and teachers in quality assurance activities and supporting teacher learning to raise attainment. Due to my position, I maintained a high degree of influence over the promotion of what highly effective practice 'looked like' within the subject area.

Within the literacy workstream I led a two-year CLPL programme which the local authority had commissioned prior to my appointment in partnership with a Scottish university. The lead professor worked with the Chief Education Officer to outline a plan for Headteachers and school staff to engage in a CLPL programme over the course of a school year. The authority split schools so that half took part in the first year and the rest in the second year. Schools were referred to as year one or year two dependent upon when they engaged. This decision was made due to the logistics of organising events on a mass scale. Schools were placed into year one or two in discussions which took place prior to my appointment.

Teachers attended six successive twilight sessions in a programme co-delivered with university staff based on the 3 Domains Tool (Ellis & Smith, 2017). The tool encompasses three perspectives:

> literacy learning involves acquiring a set of cognitive knowledge and skills; that literacy is a social practice and learning involves helping readers to acquire the cultural norms around literacy that are assumed by schools; that literacy is entwined with identity and literacy learning involves a process of developing a positive identity as a learner, a reader and a writer. (Ellis & Rowe, 2020, p. 4).

I provided follow-up support for staff in schools, holding network meetings to share good practice and undertaking visits to schools to offer support and evaluation of

impact. The expectations for all teachers in the local authority were that they use the 3 Domains Tool to redesign their literacy curriculum by incorporating new strategies and approaches to raising attainment and closing the poverty-related attainment gap using the tool to frame their thinking. In this way, the outcomes were flexible to promote teacher autonomy based on the individual needs of pupils within their class, giving teachers new ideas, practices and ways of thinking about teaching literacy. Within the programme there was no mention of this CLPL intervention nor of Teacher Noticing and there was no overlap.

The timeline for the intervention was driven by the need to ensure that data was collected prior to the commencement of the local authority CLPL program in January 2019. This resulted in a quick turn-around request for participants and therefore explains the small sample size.

The timeline was as follows: week beginning Monday 27th August 2018: Pre-Intervention Interviews and week beginning Monday 17th December 2018: Post-Intervention Interviews. Each teacher had autonomy over when they delivered each lesson within that timeframe in a format of delivery which suited their planning approach.

Setting

This investigation took place during the academic year 2018/19. The investigation took place over one school year to allow class teachers to engage in the experience over time as it is most likely that the class and the teacher will work together for that duration. In relation to the field of Teacher Noticing, this timescale is lengthier than most studies in Teacher Noticing, contributing to a gap in the field (Amador et al., 2021). This decision was also driven by findings from Eun (2008) who states that

teachers need sufficient time to develop and embed new learning. As DiPardo and Potter (2003) found, learning is a dynamic process, it happens gradually and comes in waves of progression and regression, increased time would hopefully provide greater insight into each teacher's experience.

Participants and Recruitment

I only sought participants from year two schools. This meant that I was not personally known to the participating teachers as I had previously been working with year one schools.

The type of sample selected for this intervention was volunteer sampling. This is a type of non-probability sampling (purposive sampling), where the chances of the members of the wider population being selected was less likely (Cohen et al., 2017). This form of sampling is considered ideal for small-scale, qualitative studies as it provides an equitable and simple way to explore a specific group or section of the population in depth rather than in broader terms (Teddlie & Yu, 2007).

Due to my position, I did not want the teachers involved to provide me with responses which they thought I 'wanted' to hear. This type of response bias could be difficult to detangle and lead to inaccurate findings and conclusions (Greenberg et al., 1969). Therefore, ensuring the participants were volunteers provided the best chance of mitigating some of the risk, as it meant they wanted to engage and had not been coerced into doing so.

In my call for volunteers, I made an explicit statement that I was 'in role' as a student at the university, not as a member of the local authority central team. A copy of the recruitment advertisement can be found in Appendix 1. I hoped this would provide reassurance to the participants, although I knew that my role could have discouraged

potential participants. This was something I felt was impossible to overcome as had I approached individual teachers, they would have had to have been identified by school leaders, which would have been problematic ethically in terms of anonymity, and it could also have led me to being involved in competency or quality assurance issues.

I was not involved in the employment appointments of any of the teachers involved, nor in their performance management, and had no line management responsibility for any participating teacher. I was involved in local authority school inspection visits where, as part of the central team, we quality assured the self-evaluation of schools. This involved observing lessons, forming general conclusions on the quality of teaching and learning across the school, and providing feedback to school leaders to support improvement. Within the cycle, individual teachers were not provided with feedback from observations and were not aware their Noticing abilities would be categorised. I had coincidently not previously visited any participating teacher in this capacity.

As the participants were not known to me prior to the intervention, the chance of bias was reduced, as was the chance that teachers would experience me as one in professional authority over them. I was concerned that seeking volunteers would lead to only a certain type of teacher seeking to engage (those keen to learn), giving me a sample that was not reflective of the general teaching population. This is paralleled in many studies where this method is employed; however it is often done so as the only way of ensuring participants are obtained (Morrison, 2006). Over one hundred fully qualified primary school teachers from year two schools had the opportunity to take part, but only those who self-selected by responding to an email advertisement were included in the sample. In qualitative research, when undertaking non-

probability sampling, studies can be of any size as long as they are 'fit for purpose'. Therefore, a small scale-study would be effective in this way (Denzin & Lincoln, 2003).

The sample for this investigation was three class teachers. The sample size was small due to the number of volunteers. As the intervention was not looking to make generalisations, three was an appropriate number, allowing accounts to be explored and understood in detail. The three places were filled on a first-come, first-served basis. I wanted to ensure I had recruited volunteers before any local authority programme had begun to ensure I was capturing their uninfluenced reflections. There was no stipulation of a particular year group, length of service, denomination, gender, religion, or cultural background of participants. All primary teachers were required to have GTCS full registration. Respondents were given three days to confirm their intention to engage via email. There were four respondents initially, with one emailing shortly after reporting they were no longer able to commit due to time constraints.

Following the call for volunteers I held an information evening, where the teachers came along to hear more about my research and what to expect as a participant. I shared an overview of the research aims, highlighted key details about what the investigation entailed, as well as how the data would be stored and used in this thesis.

Written consent was obtained from each participant at this session. Each teacher was allocated a participant number, which was used to store all information and data related to them. Teachers were also given a withdrawal of consent form which they could use at any time. After receiving consent, I agreed a date with each participant for the intervention to begin.

3.3 Research Design

A qualitative approach fitted my research aims because this type of research connects with direct experience (Cohen et al., 2017). A qualitative approach explores participants' voices through their experiences (Gonzales et al., 2008) and places emphasis on exploring an event in its natural setting (Burton & Bartlett, 2009). It attempts "to understand the world from the subjects' point of view, to unfold the meaning of people's experiences, to uncover their lived world prior to scientific explanations" (Kvale, 1996, p. 1). This is largely achieved through rich descriptions and interpretations which support the use of inductive coding techniques (Stenhouse, 1981). This fits well with the findings that teacher learning experiences have different effects on individuals (Eun, 2011); thus, this approach fits for analysing unique participant experiences.

This research project was undertaken by qualitative methods using a case study approach, "a key feature of qualitative research" (Cohen et al., 2017, p. 158). To explore the impact of the LTNF (Van Es, 2011) in relation to the MTN, a case study was my main consideration for representation of teachers narrative accounts. This is because a case study "examines a phenomenon in its natural setting, employing multiple methods of data collection to gather information from one or a few entities (people, groups or organizations)" (Benbasat et al., 1987, p. 370), allowing it to directly support the gathering of detailed information relating to a small-scale study. Within this investigation, a case study was created for each participating teacher. This provided scope to explore each teacher's unique experience within the intervention in sufficient depth and detail. This format supported a detailed examination of their Noticing abilities and provided the narrative behind the representation within the Noticing frameworks in the analysis. The main methods of

data collection included in case studies include interviews and diary entries (Denzin & Lincoln, 2008), both of which I wanted to incorporate in my investigation design.

Case studies can also seek to provide development of theory from an individuals' experience (Bassey, 1999) and therefore aligns well with my research aims. As case studies exist within a specific contextual environment, it would be difficult to select the elements of research and isolate them from the context in which they occur (Cohen et al., 2017). Context matters for teacher learning because teachers and pupils are unique, as are the classroom dynamics and school culture. This further supports the need for a qualitative case study approach which allows the individual teacher's accounts to be explored in detail (Gomm et al., 2000). This would inform the research questions from those individual perspectives, without making representation of the wider population, an approach common in qualitative research (Cohen et al., 2017). My investigation was undertaken in the acknowledgement that not all cases can be put together homogeneously (Ford & McMahon, 2019).

When exploring Teacher Noticing from teachers' perspectives, it is important to consider the limitations of self-reporting. From my own experience I found that undertaking formal lesson observations rarely provided an accurate depiction of what takes place daily, providing a mere performative experience, aspects which I wanted to avoid. I also felt that my influence being in the room could add a further detrimental impact to the children and teacher in terms of teacher and pupil behaviour. Forming conclusions from data that is solely self-reported presents challenges with teachers simply reporting what they think the researcher wants to hear (Goe et al., 2008). Klooster et al. (2008) found that where there is self-reporting within an intervention, teachers tend to rate their own practice at a higher quality

than an external observer, important factors to bear in mind when considering this investigation's conclusion.

Conversely, when teachers self-report, such as in interviews and diaries, researchers can "tap into teachers' intentions, thought processes, knowledge, and beliefs" often, more effectively than other research methods (Goe et al., 2008, p. 38). Goe et al. (2008) add that as the teachers are immersed in their environment, having them evaluate an investigation pulls together information from the classroom context, curriculum, and their own teaching that objective researchers can miss.

Intervention Design

To identify what was important in reading comprehension, I explored prominent evidence-informed practices within the subject area, summarised in Appendix 2. Once I identified the three practices that would form the basis of the intervention, I designed materials to support teachers with their implementation of each practice. These leaflets were not included within this thesis and were summaries of the content found within Appendix 2. I aimed to strike a balance between providing theoretical knowledge to ensure teachers had sufficient information and providing teachers with the space and autonomy to decide what this looked like in their class.

I created an overview handout for each practice with a summary outlining the theoretical underpinning, including examples of supporting resources and how to access further information and reading. It also included resourcing ideas including talking pegs, flashcards, and picture books for older children. Teachers were required to plan and deliver their own lessons using these overviews as a guide; there were no blueprints or lesson plans included within the material provided. Teachers were not aware that their Noticing abilities would be 'scored'. The questions asked with the

interviews and diary entries were distinct, they did not relate specifically to teacher's Noticing abilities. While this reflected the shifts in my own thinking and supervision, doing so presented an ethical consideration. This is somewhat negated as the purpose of this study was to represent and better understand Teacher Noticing, and therefore the data collected facilitated the application of a new framework to inform the development of the field. The data provided was the gateway to achieving this, rather than being the focus.

3.4 Procedure

CLPL Intervention

The specific CLPL intervention required each teacher to engage in a pre-intervention semi-structured interview with me to capture their initial views prior to any intervention. Following this, the intervention consisted of each teacher being asked to plan, deliver and evaluate a series of lessons, within their own class, developing three evidence-based practices within reading comprehension. Teachers were required to record a digital diary entry after each lesson, and each practice was developed over the course of three lessons. At the end of the intervention, each teacher joined me for a post-intervention semi-structured interview to explore the impact of the intervention. Teachers were provided with materials which provided an overview of each practice, and sample resources and ideas to help them plan their lessons but did not have to use these. Teachers did not have to share their planning with me nor provide any evidence or physical output from the lessons for inclusion within this investigation. They were also provided with a digital recording device and a set of diary prompt questions to support their reflective commentary.

3.4.1 Pre and Post Semi-Structured Interviews

I began and ended the intervention by undertaking a semi-structured interview with each teacher. This is because researchers such as Fullan (2007) and Guskey (2003) state that changes for teacher learning only come to the fore after the experience has already begun. Therefore, going back to revisit the same questions allows teachers to come with new perspectives and understanding to expand and reflect in a comparable way. I selected a semi-structured interview as it encourages more open-ended questions and discusses the broad themes based on an individual's feelings, beliefs, and experience (Saldaña, 2011). This method is effectively used when the researcher aims "(1) to collect qualitative, open-ended data; (2) to explore participant thoughts, feelings and beliefs about a particular topic; and (3) to delve deeply into personal and sometimes sensitive issues" (DeJonckheere & Vaughn, 2019, p. 2).

Underpinning all aspects of the investigation was the genuine quest to listen and to understand the teachers' experiences (Pinn, 2001; Rathgen, 2006). This fit well with my aims as I wanted to hear from the teachers themselves to understand their experiences and reflections. Being able to ask any supplementary questions, to seek clarity or expansion helped me get a better sense of each teacher individually, making the interviews richer. As Fontana (2002) illustrates, interviews are very much a product of specific individuals coming together at a time and place and, therefore, ensuring participants had control over when the interviews took place was key. I was very aware that interviews are not natural discussions (Kvale & Brinkmann, 2009) and are highly contrived (Drever, 1995). I tried to help make the conversations more natural by building a rapport with each teacher. There were no time limits on the interviews, although they were all approximately thirty minutes long.

During the interviews, I had a copy of the semi-structured interview questions with me, and an iPad to record the interview. I wanted to be present within the moment of the interviews and not be consumed by taking notes, therefore recording the interview helped to support this. Gillham (2000) states that note taking can be a distraction to both the researcher and the participant. It has been shown that being able to listen actively during interviews is a core component to ensure the dialogue is free flowing and productive (Schostak, 2006). I wanted the teachers to be the focus of the dialogue and for them to do most of the talking. This was the case with a high amount of the recorded material being the voice of participants. Thus, the interview was led by their own thoughts and experiences (Clandinin & Connelly, 2000). Supplementary questions were used to clarify and delve deeper. I made no personal comments or responses to what was shared.

The semi-structured interviews were separated into four key themes: teacher's background; perspectives on comprehension teaching; teacher reflection, and teacher professional development, as seen in Appendix 3. The first theme was omitted from the post-investigation as this information did not change over the course of the investigation. The use of key themes provided a structure to the interview with specific open-ended questions, complemented by the ability to adapt to participants' responses, taken from the 'concepts of difficulty' adapted from Salvatori and Donahue (2004) to elicit participants' views. It also draws on Shulman's models of teacher knowledge (1987) and the Model of Pedagogical Reasoning and Action created by Shulman (1987), "a dynamic and cyclical model of teacher reflection and action" (Fernandez, 2014, p. 81). This model is built upon five processes: comprehension, transformation, instruction, assessment, and reflection, all of which start and end with an understanding of an act, in this case, a specific teaching

practice within reading comprehension. This is also derived from research into developing teacher knowledge, where "one starts from the assumption that the teacher builds knowledge in your classroom in contact with their students that is distinct from that formal knowledge learned in the academia" (Fernandez, 2014, p. 81). In his later work, Shulman (2015) recognises that the social, emotional, cultural and moral dimensions of decision making were downplayed, and more attention should be played to "habits of heart, habits of mind and habits of practice" (p. 12).

3.4.2 Digital Diary Recordings

I wanted to provide a further interim data capture between the interviews to capture more 'in the moment' reflections after teachers implemented each practice. Teachers, therefore, recorded a digital diary entry to share their reflections after each lesson. I decided that teachers should implement each practice three times as I felt that one lesson would not provide sufficient time for them to reflect. This meant that there were three strategies, implemented over three lessons, totalling nine digital diary entries for each teacher.

Once the first semi-structured interview was completed, I provided the teachers with the overview explaining the first practice. I then left them a voice recorder for them to record their diary entries and showed them how to use this to capture their responses. I also talked through the prompt questions for them to use when recording their entries. There were no time limits on the audio diary entries, and most were between two and ten minutes. After they had completed a practice and recorded their diary entries, they arranged for collection of the data from the recording device by contacting me. I then collected the information booklet, downloaded the data from the recording device, and provided them with the next information booklet. This cycle continued for each practice, for each teacher.

I wanted the diary entries to allow teachers to be free to share what was significant to them, in an instant, responsive way, allowing me to gather more information about the effects on their practice as they experienced it. Waiting until the end of the intervention would not allow me to isolate and identify individual shifts. I wanted this capture to be simple and manageable, thus removing any significant barriers for teachers that required them to remember their reflections or meet with me to discuss these. The digital diaries were a reflective task in which the teachers recorded their responses honestly and openly to the prompt questions provided (see Appendix 4). Writing their reflections down could have been seen as an additional time-intensive task, which could have been a barrier to completion, whereas recording digital responses was quick, easy and manageable.

Following completion of the interviews and diaries for each teacher, I transcribed the recordings from both the pre and post interviews and from their diary entries. I transcribed the data myself. I was aware that the process of transcribing the data is time-consuming but taking time to engage with my data through this process brought me closer to it as I listened repeatedly to check for accuracy. Transcribing the data led to me developing a recursive and reflective approach to the data. With each time, I developed my understanding of what I was hearing, so by the end I felt I knew and understood each teacher better than I would have if I had removed myself from this process.

3.5 Data Analysis

According to Saldaña (2012), coding is the "critical link" (p. 3) between the data and its meaning. I followed the recommendations in Saldaña (2021) for the layout. I transcribed the responses and separated the data first by question and answer. Within each answer, I then separated the data into spoken paragraphs with a line in between

when the topic or subject changed. Gee et al. (1992) describes these as poetic-like verses or stanzas, "formatting choices are a part of the analysis and may reveal or conceal aspects of meaning and intent" (p. 240).

According to Saldaña (2021), deductive coding is where a set of *a priori* codes are used, this means they are pre-determined and applied to the data, a method best recommended when the research is theory-driven to explore specific experiences where there is certainty that the methods will capture the experience. Deductive coding was the most effective method to help me answer my research question because I wanted to apply my data onto two frameworks, the LTNF (Van Es, 2011) and the MTN, both of which have set criteria for Teacher Noticing.

Two analytical cycles were undertaken. The first employed the LTNF (Van Es, 2011) and the second, the MTN. Each analysis was conducted in a method which provided a 'best fit' using the criteria set out within the categorisations of both frameworks.

The LTNF (Van Es, 2011)

I categorised my data onto the Van Es (2011) framework for Teacher Noticing to provide me with a representation of each teacher's experience across the Four Levels of Noticing. I categorised the statements using the descriptors set out by Van Es (2011) to typify each level, taking account of what and how teachers notice to produce a level for each participant response given at all stages of the investigation. I gave each level of the framework a colour (outlined below) and categorised each statement, as seen in Figure 2.

	Level 1	Level 2	Level 3	Level 4
	Baseline	*Mixed*	*Focused*	*Extended*
What Teachers Notice	Attend to whole class environment, behaviour, and learning and to teacher pedagogy	Primarily attend to teacher pedagogy Begin to attend to particular students' mathematical thinking and behaviours	Attend to particular students' mathematical thinking	Attend to the relationship between particular students' mathematical thinking and between teaching strategies and student mathematical thinking
How Teachers Notice	Form general impressions of what occurred Provide descriptive and evaluative comments Provide little or no evidence to support analysis	Form general impressions and highlight noteworthy events Provide primarily evaluative with some interpretive comments Begin to refer to specific events and interactions as evidence	Highlight noteworthy events Provide interpretive comments Refer to specific events and interactions as evidence Elaborate on events and interactions	Highlight noteworthy events Provide interpretive comments Refer to specific events and interactions as evidence Make connections between events and principles of teaching and learning On the basis of interpretations, propose alternative pedagogical solutions

Figure 2 – The LTNF including colour-coded categories

Saldaña (2021) advised that, when coding in a small-scale study, coding directly onto the data can be effective, as "Researchers with smaller data sets needing just three to ten major codes and/or categories total can assign a specific-coloured font to text passages that belong in the same category" (p. 45). I applied this method within my own design. I began with my raw transcribed data on Word documents stored on the university secure remote server. After many read-throughs of the data, I began to highlight each response in the colour that matched the level I thought represented the statement in line with the descriptors of both aspects 'what' and 'how' teachers notice, as illustrated in Figure 3.
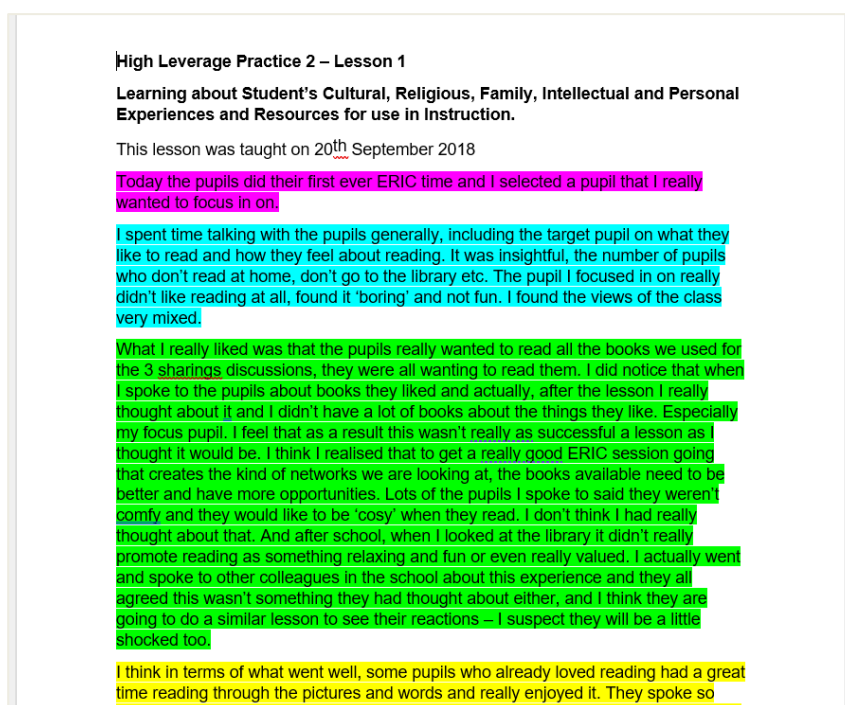

Figure 3 - The LTNF example extract colour-coded

I then utilised Excel to capture the number of responses at each level within each data set to help analyse each data source across stages of the investigation, allowing me to generate the percentage of responses at each level within a given data source. This then allowed me to compare each teacher's pre and post overall level positions in relation to the number of responses in that data set as well as explore how each practice built towards that.

For example, for Participant 1, at the pre and post stage, I added up the number of statements at each level out of the total number of statements made; an extract is shown in Table 1.

Participant 1				
	Level 1	**Level 2**	**Level 3**	**Level 4**
Pre-Intervention	38 out of 65 statements	25 out of 65 statements	2 out of 65 statements	0 out of 65 statements
Post-Intervention	7 out of 28 statements	7 out of 28 statements	5 out of 28 statements	9 out of 28 statements

Table 1 - Example of Distribution across Levels within the LTNF

To demonstrate the overall change for each teacher, I converted it to show the percentage of responses which were at each level; an extract is shown in Table 2.

Participant 1				
	Level 1	**Level 2**	**Level 3**	**Level 4**
Pre-Intervention	44%	45%	12%	0%
Post-Intervention	17%	28%	24%	28%

Table 2 - Example of % Distribution across Levels within the LTNF

This allowed me to then plot the percentage coverage of each level at each stage of the investigation to allow for comparison. However, this method was by no means an exact science, which was one reason why I was concerned over how the LTNF summarises teachers' experiences. I found it challenging to be able to show a comparison over the Four Levels without converting the number of responses at each

level to percentages, I had seen this method used in another investigation (see Baki & Isik, 2018) into Teacher Noticing using Van Es' (2011) framework and therefore felt that this would represent the data in a way which allowed for impact to be easily observed. Therefore, this method of displaying the data was viewed as a 'best fit' approach. The result was the creation of percentage graphs showing the number of statements against the total number made within that data set, for example in Figure 4.
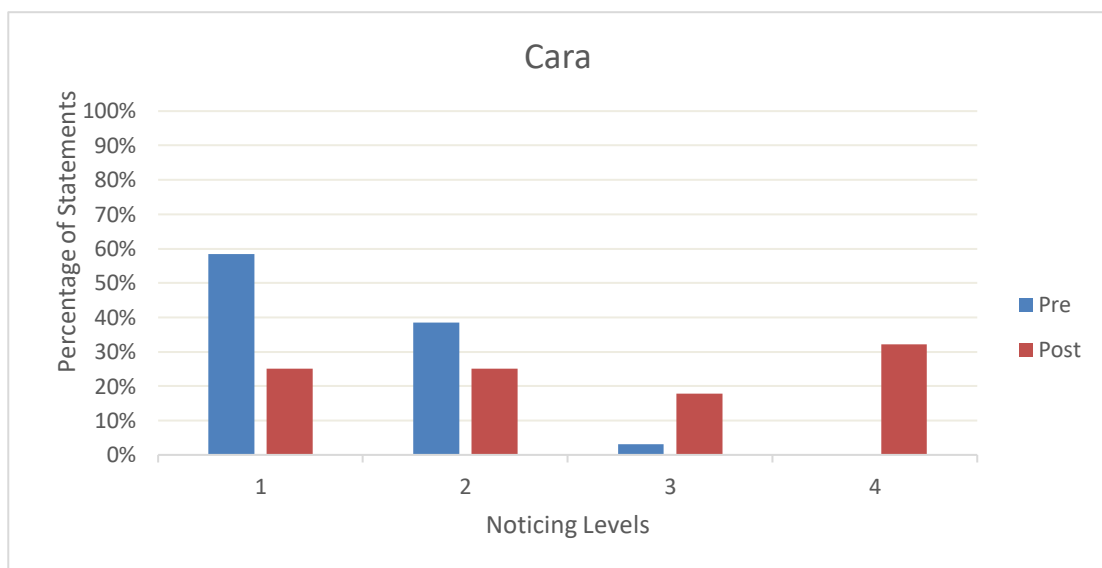

Figure 4 - Example of Pre- and Post-Intervention data on the LTNF

The MTN

I applied a similar approach to the MTN using Excel from the outset to chart both aspects for each statement. After taking time to transcribe the data I began to chart the corresponding number and letter for both what is noticed and the depth of response. Each response was categorised using the criteria I devised and then plotted on the Matrix. The dots were then scaled to show the most prominent responses. As my own Matrix charted both what is noticed and also in what depth separately, each

statement was coded twice, once for the x-axis and once for the y-axis, as exemplified in Figure 5.

	A	B	C
1	Participant 1: Pre Interview		
2		What they Notice (X-Axis)	Depth of Response (Y-Axis)
3	R: What stage you are teaching this school year? P: Early Level, Primary 1	1	A
4	R: How long have you taught that stage? P: This is my third year teaching P1.	1	A
5	R: Is this your second year in a row or the second time? P: The second time. The only other time was when I was on a university placement.	1	A
6	R: How long have you been a primary class teacher? P: 4 years	1	A
7	Thinking about my own experience of University, I don't honestly remember there being much of a focus on comprehension. We spoke about literacy generally and schemes used but not specifically how to effectively teach comprehension. Reading was emphasised in terms of scheme books and comprehension was considered as the questions from the text which tell us if they have understood what the author has written. They did talk a lot about reading to children regularly so that is something I do remember which I do try to do as often as I can. The importance of comprehension was stressed in terms of checking a child's understanding matched that of what you expected from the text but that was about it.	1	B

Figure 5 - Example of coding within the MTN

I used Microsoft Excel as it was the most efficient way to log the numerical and alphabetical categories which I would then use to plot onto my Matrix. I was then able to plot my coded data onto my Matrix and scale the response so that the scale was the same on each graph; see, for example, Figure 6.
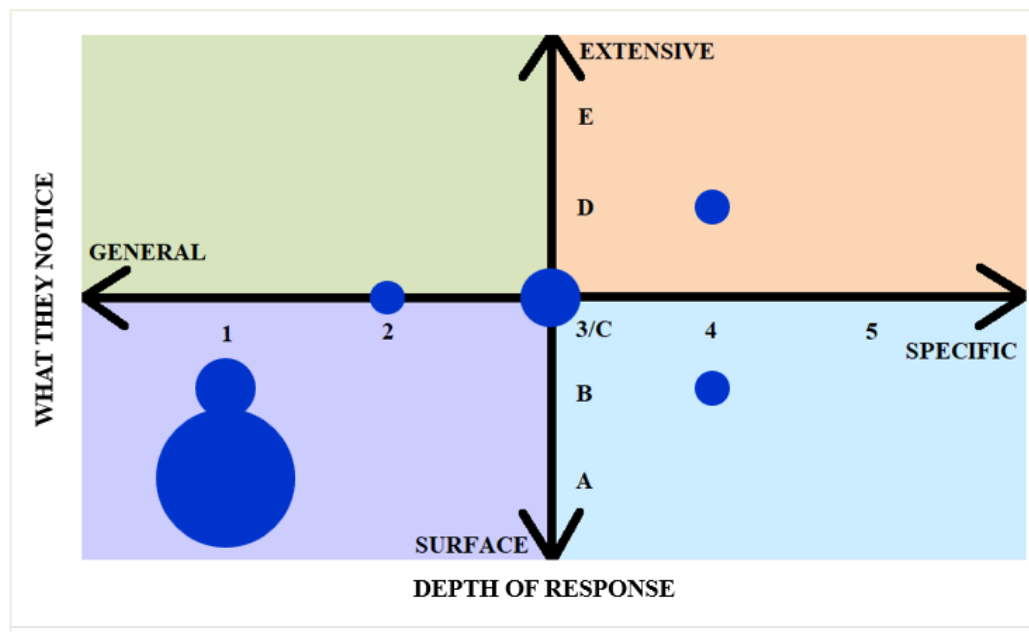

Figure 6 - Example of Pre-intervention data represented on the MTN

Fontana (2002) states that there are many factors which impact on the analysis of data gathered in studies, including what is contributed, and not, and what participants' motives are for taking part. Therefore, I needed to have a level of scepticism held in relation to the data I received from my participants. I was satisfied that as participants were volunteers. They were not obliged to participate nor were they encouraged or influenced by me in any direct way to support positive conclusions or results prior to engagement. Interestingly, Harré et al. (1999) notes that the position which participants hold is not usually static; rather, it will most likely be fluid over the course of the research, thereby indicating that as teachers move through the course of the investigation their opinions, motives and feelings towards the research may change. This, I felt, would be reflected in the balance of interviews and diary entries.

3.6 Ethics

Ethical considerations included ensuring that: participants were volunteers, data held was under randomly assigned participant numbers, and pseudonyms were used to protect anonymity; finally, contextual and identifying information regarding the school and local authority was removed.

The intervention took place under the teacher's own direction: it was planned, delivered and evaluated by them within their own classroom, giving them full control over lesson design and implementation. All of the practices implemented within the intervention were considered a part of a teacher's day to day practices by the local authority and are evidence-informed. They did not involve direct observation of children, thereby eliminating the need to gain consent from pupils and parents respectively.

Teachers were also in control of how much or how little they shared during their diary entries and interviews. Within the responses shared by each teacher, they all, in some way, spoke about the natural shareability of the experience and how they had either shared what they had learned with colleagues, in a job interview or even where colleagues had noticed an impact on pupils and had asked what new approaches they had been using. This showed that the teachers themselves influenced their own right to autonomy.

I determined that a 'statement' was defined as a spoken paragraph within a response pertaining to a particular subject or topic. I selected this based on the recommendations of Saldaña (2021) as an approach to transcription and analysis which is both practical and consistent. This was an interpretive decision.

It is worth noting that within the conversion of qualitative responses, each statement required conversion to numerical scores which were then converted into qualitative data. While common within data gathered in the field of Noticing (Scheiner, 2016) it presents a challenge for securing accurate outcomes. For claims within this intervention sit alongside the challenge of maintain accuracy in the categorisation of responses as these, by nature are subjective and subject to my own interpretation. Both the LTNF and the MTN have specific criteria for responses, but how these are applied is represented through the lens of the researcher.

The participants met briefly during the information evening, they had not met previously, as far as they indicated. They would be able to identify each other at future collegiate work and training; however, their details were not shared. So, other than knowing they were a primary teacher within the local authority, they would not know any more identifiable information.

Each teacher was able to withdraw from the intervention at any time, without needing to give a reason. The interviews were conducted at a time and location to suit the participants and there were provisions made to ensure that the well-being of each teacher was supported should an interview be terminated early due to any form of distress being presented. As teachers had autonomy with implementation, they would have also been able to stop, shelve or postpone delivery should they have any concerns regarding the impact on their pupils. Provisions were also made so that teachers could contact the researcher to discuss any concerns at any stage in the implementation.

3.7 Challenges and Limitations

Transferability and Replicability

This intervention is entirely unique as analysing and applying the results onto the new MTN had never taken place before. The methods used could certainly be replicated, which I would encourage to further strengthen the role of the Matrix in representing Teacher Noticing. This intervention did not seek to represent the population; therefore, when evaluating the findings, the importance was placed on the uniqueness of each teacher's experience and attempts were not made to support broader generalisations.

Credibility and Validity

Validity can be defined as "the degree to which the data ha[s] been interpreted in the right way" (Anastas, 2004, p. 63). I aimed to present three individual accounts. I also made the decision not to complete a member check with my participants. Initially I assumed that this was something I would do; however, when researching my methods, I found that it can be quite a controversial approach, encouraging participants to 're-think' their views and responses (Cohen et al., 2017). Initial responses were more relevant to me because they provided the honest reflection in that moment, a capture of an unrehearsed response. As learning and perspectives can change over time, I knew that the post-intervention interview would capture more of the longer-term impact and the diary entries would highlight the subtle shifts – a balance I felt was effective for achieving my research aims.

3.8 Conclusion

In summary, I designed the MTN to illuminate the constrains of the most prominent framework within the field. Due to the iterative nature of this research study the

MTN was developed from the LTNF and therefore is both an outcome and an analytic tool to answer research question one. Chapter 5 discusses this in more detail.

Three primary teachers engaged in a CLPL intervention exploring three evidence-informed practices for reading comprehension to allow for evaluation of the MTN to represent their experiences in an accurate, multidimensional way. Teachers engaged in pre- and post-intervention interviews as well as recorded diary entries which were transcribed and analysed creating case studies to demonstrate the shifts in their Noticing abilities. Analysis was undertaken twice, on two different frameworks for Teacher Noticing: the LTNF (Van Es, 2011) and the MTN. This allowed for the representation of teachers' experiences to be compared, contrasted, and discussed to ultimately evaluate the usefulness of the Matrix in the field.

In chapter four, the narrative accounts are shared detailing each teacher's pre- and post-intervention experience. They contain key quotations and responses shared from the teachers themselves to illustrate the impact of the experience in relation to their noticing abilities, with reference to the literature explored. In chapter five, teachers' experiences are represented within the two frameworks for Teacher Noticing: The LTNF (Van Es, 2011) and the MTN, where teacher Noticing abilities are evaluated. In chapter six, both frameworks are evaluated, allowing for comparison of the representation of teachers' experiences on both frameworks, leading to an evaluative discussion on the role of the Matrix in illuminating teacher learning via Noticing.

4 Findings: Teacher Experiences

The literature reviewed in chapter 2 demonstrates that Teacher Noticing is a powerful vehicle for reflecting on, and improving, teaching practice.

Teacher Noticing has the potential to support and empower teachers to deliver the high-quality teaching that could improve pupil outcomes (Van Es & Sherin, 2002). It supports teachers to develop their reflections and analysis of classroom events, considering what they pay attention to and how they use this information to inform their future pedagogical choices (Windschitl et al., 2011). In this way, Noticing is a key component of expert teaching, which involves knowledgeable, skilled, and adaptive teaching (Ellis & Simpson, 2020).

This chapter provides a summary narrative for each teacher who took part in the intervention, detailing the significant aspects of what they learned, as evidenced from their experience and how this links to Teacher Noticing. Each case study is reported in turn, beginning with a brief teacher overview, before exploring the findings in a narrative style. This is supported by key quotations taken from teachers' own words to illustrate the impact of the intervention on their Noticing abilities, with extracts taken from their pre- and post-intervention interviews as well as snapshots from their diary entries. The accounts are shared against the backdrop of literature on Teacher Noticing to aid the understanding of what each teacher's experiences suggest about their Noticing abilities and how these are impacted on by the experience.

The commentary and responses shared within the accounts of each teacher represent their own views, perspectives, and opinions. I accepted each teacher's perspective on their own practice. I have consciously not made any judgements about whether anything that is shared is true to purposefully focus on using their responses to

understand their Noticing abilities and how they can be represented. Their responses were not evaluated in a way to reflect on their own strengths, needs and capability, rather to provide the data to be represented within the Noticing frameworks as this was the focus of this study. Each teacher's raw experiences were shared and provided valuable insight into their Noticing abilities which resulted in a highly personal data set on which to frame my investigation into Teacher Noticing.

Three teachers' experiences are shared in the form of three case studies. The three teachers are Cara, Donna and Allison. Their experiences within this study are provided in turn based on the order in which they confirmed participation in this study. A brief background of each teacher is provided at the beginning of the case study to provide some key contextual information prior to the narrative account of their experiences both pre- and post-intervention.

4.1 Context

The cohort of the investigation was formed of three class teachers, based in three primary schools within one local authority in central Scotland. They took part in a CLPL intervention, implemented within their own classroom by the teachers themselves. The practices selected by the participating teachers were: Developing Reader Response through the '3 Sharings' (Chambers, 1991), Utilising Cultural Capital through 'Everybody Reading in Class' (Quigley, 2016) and Supporting Strategy Instruction through 'Reciprocal Reading' (Palinscar & Brown, 1984). The practices were implemented by the teachers independently and without my oversight. Teachers dictated the length of the investigation within the academic year.

4.2 Cara's Experience

Pre-Intervention

Cara was teaching Primary 1 (ages four to six) during the intervention. Cara worked in a school located within an area of multiple deprivation in a semi-rural location. Indicative of this, the school and immediate locality were ranked high in terms of the Scottish Index of Multiple Deprivation and two-thirds of the pupils were entitled to Free School Meals (SG, 2021).

Cara had taught Primary 1 for three years consecutively and had been teaching for four years. She was previously a supply teacher across the local authority for one year prior to the appointment in her current school. Cara reported that she had a lively and energetic class. She felt that each year, the "gap" between pupils' abilities, experiences and skills within literacy, and beyond, had grown and continued to widen. Cara reported that the spread of pupil ability was becoming more challenging to manage as a teacher. Cara provided little evidence or explanation as to why she felt this was the case, and importantly, how she was currently addressing these challenges. In this way, Cara demonstrated that she was not aware of her active role in the classroom; she was not demonstrating the criticality of exploring 'why' and is merely providing observations on 'how' things appear within the classroom (Wall & Hall, 2016). Further, when linked with Teacher Noticing, Cara at that time demonstrated limited Noticing ability, failing to see the symbiotic relationship between teaching and learning (Lampert, 2010). Instead, she was merely attending to her observations, only displaying the first component of Noticing (Van Es & Sherin, 2021).

Cara reported that there had been no professional learning opportunities available on comprehension, nor literacy generally, during her time teaching. Cara emphasised that the lack of training, combined with the lack of resources greatly impacts on teaching comprehension successfully and that this is a challenge teachers face at all

year groups they teach. One of the biggest barriers she faced was "the total lack of resources" offered to teach reading comprehension, especially in the early years. She felt that there were no suitable activities for younger children who cannot engage with formal written comprehension tasks and lengthier discussions. In this way, Cara represented what Korthagen (2017) suggests as teachers facing a wide range of information forming superficial reflections that focus on factors outwith their control, thereby reinforcing that change is not required and that the reflection is providing little value to improve her teaching.

She worried that there are ever increasing expectations on staff to meet attainment targets, stating, "…I can't get them all to where they need to be. There's no way, it's just not possible". Cara felt strongly that children are coming into school less and less "ready" and the gaps to fill in early learning experiences are becoming more significant. She reported that there are children starting school barely able to talk, not independent in their basic needs, and not having the same early life experiences that schools build upon, for example, going to a library or sharing a bedtime story. This, she said, impacts on the learning she can cover and how much progress is made. She reported that this also widens the gap of attainment from the most and least able in the class, exemplifying this by comparing the quality of speech which children present when they start in Primary 1. From a Noticing perspective, this demonstrates that teachers face a very high volume of information from learners in the classroom environment in any given lesson and it can be difficult to identify what to pay attention to (Sherin & Sherin, 2011). For Cara, the result could be, described by Miller (2011) as the tunnelling effect, whereby teachers become overwhelmed with the information they receive, ignoring the conflicting or contrary information to their previously formed conclusions that would be useful for them to consider.

She noted that the school's Literacy Lead brings back information from local authority leaders to share with staff, information that is often policy-related, but said that "The actual development of teachers' understanding of the links between readers and comprehension is lacking". Cara reported that she engages with research through internet blogs, teacher websites, and social media groups to gain new ideas for use in the classroom, although recognises that there are flaws with these, namely that there are not specific ways of determining the quality of these practices, the theory, implementation, and so on. This highlights a problem identified by Riverin and Stacey (2008) whereby informal experiences are often unsupported and unregulated. From a Noticing perspective, Cara demonstrates that she is self-aware in the recognition that finding her own ways of learning does present challenges (Bransford et al., 2006); however, what she demonstrates is the understanding of the importance of theory informing practice (Windschitl et al., 2011) and the need for teachers to be able to embrace new practices and evaluate these with criticality (Gibson & Ross, 2016). This could indicate that Cara is attending to what is taking place, identifying that there is a problem (Van Es & Sherin, 2021). When describing a resource called 'Bloom's Buttons' (Alaniz, 2020), she reflected that,

> I'm not sure if they are appropriate for my pupils, if I'm using them correctly, you know. Your professional reading would be much more effective if it was guided, and you could look up specific strategies etc. and how to use them in the classroom. That's what I feel is missing. (Cara)

This shows that Cara reflected on the impact of her teaching practices on her pupils and identified that through a surface-level interpretation that further guidance and support would be beneficial (Van Es & Sherin, 2021). There is, however, a limited exploration of how she formed this conclusion, what made her reflect in this way,

resulting in limited Noticing. In this pre-intervention example, Cara did not demonstrate an in-depth interpretation of what she observed and did not demonstrate the intentionality of shaping whereby the teacher becomes the active critical thinker within the learning environment (for teacher and pupil) (Aukerman & Aiello, 2023). Cara seemed to be aware of this issue and its impact but did not see herself as being able to influence or take action within her own classroom to ensure practices are relevant and implemented true to their theoretical underpinning. These are somewhat surface-level conclusions and they, in Cara's mind, will have solutions outside her own environment. Cara in this instance did not demonstrate how she could prioritise her teaching based on the information and conclusions she formed (Van Es & Sherin, 2021).

Over her years teaching, Cara reported she became more "passionate" in promoting a love of reading, reducing disengagement, and promoting positive attitudes towards reading and literacy from an early age. She felt that the attitudes and experiences towards reading impact on the classroom ethos and environment, stating, "I am more able to recognise that what we are providing isn't working for everyone and that's not right". This connects with what Aukerman and Aliello (2023) describe, whereby teachers, through accessing the third Noticing component (shaping), become concerned with their own learning, as well as their teaching. What was lacking for Cara was the active role of the teacher in using her observations and interpretations to effect change and in turn use these to further shape practice (Van Es & Sherin, 2021), thereby presenting a limited concept of her Noticing ability at this time.

Cara had not engaged or heard of any of the practices used within the intervention:

> I think they would all be helpful. None of these are practices I know a lot
>
> about or have heard of, so I'd like to give each one a try and consider how

these work for my learners and also how they fit in with my practice and what's needed. (Cara)

She was comfortable with her current practices but was "glad" to be trying new strategies. She also enjoyed having a variety of comprehension approaches that combined individual, group and whole-class learning; she felt "these would fit in nicely to provide more of a mix for pupils". This supports previous research (see Gonzalez et al., 2005) where teachers within their intervention reported that having the knowledge and theory behind the practices they implemented was important to provide the support and background to help them implement these within their own classroom. In this way, it seemed 'do-able' (Black & Wiliam, 1998).

Cara believed that her current pedagogical decisions did not always meet the needs of her learners, and this weighed on her mind and reduced her confidence. She shared that her reflections were always negative, as she got stuck on why an aspect was not effective. She commented that she felt quite de-skilled at that moment, and that she had a sense of frustration as she cared deeply for her pupils. Cara believed her view had developed over time,

> Right now, my practice is not the way I want it to be, but I am so hopeful that this [the CLPL] will be such a positive experience for myself, my pupils and can be shared school wide…I feel it's because I reflect that I am starting to see the issues behind my approaches and curriculum design. (Cara)

This response demonstrates the potential for learning evident from Cara's genuine motivation to improve her practice and ultimately pupils' learning. This parallels findings from Timperley et al. (2007) who assert that some of the greatest gains from CLPL outcomes are observed where teachers have reflected and felt that their

practice was not providing the best learning experiences for pupils. Interestingly, Cara implied within her pre-intervention interview that there are set practices and approaches that work and can be translated into her own classroom, without allowing for the individuality of teacher knowledge, school context or pupil experience. Her statement evidenced what Van Es (2018) was trying to avoid, the idea that all teachers will be able to notice, respond, and reflect in the same way. In this way, a 'one size fits all' approach is a very limited feature within Teacher Noticing (Van Es, 2011).

Post-Intervention

During the intervention, Cara shifted the importance she placed on the need for resources to drive effective comprehension teaching. She initially felt the lack of resources was a significant barrier; however, through the learning experience, she reported that high-quality texts were the main driver for effective comprehension lessons. This shift resulted in texts "driving" reading comprehension lessons: she noticed, "I don't need worksheets and pages and pages; it's about being present with the pupils". She reported there is less focus on creating activities with lots of resources and more on using the quality of the text as the focus of discussion and collaboration to create meaning. This created what she described as a "more effective approach" to her teaching of the subject area. In relation to the components of Teacher Noticing, Cara, showed she has improved her ability to attend to what is important; she has observed new information, interpreted the impact of this and used this to shape her own practice as well as her own thinking. This propelled her to new conclusions involving a far more active role in shaping pupils' experiences and responding to the problematisation of practice (Van Es & Sherin, 2021). Furthermore, Cara's perspective of what is important developed as she was no longer

"looking at comprehension in such a narrow tick-box, right or wrong approach".

Cara felt her own practice had shifted and she began to think regularly about "what I am trying to teach with comprehension, what's important in comprehension and change my curriculum to match that". This parallels findings from Van Es and Sherin (2021) who identify that what teachers paid attention to shifted over the course of their investigation; as teachers focused more on pupils' experiences, they paid less attention to more superficial observations.

Cara felt that the impact of the CLPL not only benefitted her, but her pupils too. She described the experience as a "driver for change". She reported that she had seen a huge impact on her learners, stating, "They are engaged and motivated about books in a way I have never seen before. We all talk openly; it's no longer the same pupils answering, everyone has a voice". As a result, Cara removed her fixed literacy groupings and engaged in more whole-class and mixed group work, "Everyone, in my eyes, is a reader and I know the children feel that". In similar findings at the post-intervention stage, Damrau et al. (2022) demonstrated that teachers' perception of pupil abilities, and subsequent classroom experiences, were linked to their expectations of their pupils. Similarly, Van Es et al. (2017) found that teachers developed their perspectives on pupil status and positioning within the classroom including pupil groupings, ability, participation, and engagement within in their intervention. By engaging in these new practices, Cara was able to attend, interpret and shape her practice (Van Es & Sherin, 2021), in a transformative way (Tay et al. 2023), for her and her pupils. This demonstrates the most extensive component of Noticing: shaping, whereby teachers are active learners, taking action from informed observation and analysis of practice and using this information to inform future practice (Van Es & Sherin, 2021).

Cara reported that being able to listen to what pupils value and think about reading, and using this knowledge helped to increase her confidence to support pupils in class more effectively   For example, she said, "I still am so amazed that one pupil who was so disengaged finally engaged in reading when I took the time to explore books which he liked and would be interested in". This effectively demonstrates what Erickson (2011) sees as an essential component of Noticing, the ability to 'put everything together'. Cara was able to reflect on the engagement levels before the intervention and reflect on the levels after and use this to form a conclusion that engaging with the child on an individual basis about what he liked to read had made a significant difference. This, in turn, gave her further reflection for future decisions and next steps for this child and of the class generally, thereby beginning to use her interpretations to shape future practice (Van Es & Sherin, 2021). This aligns with Spitzer et al. (2011), demonstrating the 'experimental' quality of Noticing where Cara developed her knowledge of new skills and approaches to keep things interesting and engaging, not just for her pupils, but for her too as shown with her comment, "I dreaded it before".

An unintended benefit of engaging in this CLPL experience, according to Cara, was that it supported a child-centred approach to learning,

> They were the ones asking, 'Can we do this?', whereas before I would be the one saying, 'We have to do this'. I was listening to what the children wanted and that's what we did. And that really is child-led learning, which is what I wanted to achieve after all. I just didn't see it happening through this way. (Cara)

This example demonstrates, as seen by Basit (2003) and Earl et al. (2003), that following a period of learning intervention, teachers reconceptualised what they

classed as effective teaching within the subject area explored. Cara came to a new understanding of how to develop child-led practice through reflecting on what she noticed about her pupils' engagement to reframe her pedagogical approach and how this could be achieved. In this way, her own learning was further activated as she worked with her pupils, driven by their needs and interests within her own classroom to drive forward curriculum change (Ellis & Simpson, 2021).

Cara found great value in Practice 2, using Everyone Reading in Class, to build pupils' interests and to hook in new readers. For Cara's pupils, it seemed to be that one of the effective ways to teach comprehension was to start from a love of reading, a social approach, to build confidence within the class, supporting the less-experienced to engage within areas that interested them. This prompted Cara to make changes with her pupils to the library space, to develop a reading café and build up class displays of favourite authors and genres:

> I have actually got a chart drawn up with what the children like, I can group them with their similarities, and this has helped me look at resource buying so that it meets what my pupils are interested in. During ERIC now the pupils are starting to network too. Some children didn't know dinosaurs and fossils were all linked in some way. We have been able to discuss how X, Y and Z are all linked. It's building those connections with them to help them develop that sense of the world and how it all relates. We are still talking about dinosaurs in a different way. I would like to continue with that; it was so interesting for them and for me because I'm learning every day too. (Cara)

Here, Cara provided a detailed analysis of her pedagogical decisions. She showed how she used her observations to develop her practices that, in turn, developed her thinking. She connected her own and pupils' learning and the joy of the

transformational nature of Noticing which is experimental and derived from classroom experience (Spitzer et al., 2011). This demonstrates the core components of Noticing: attending, inferring, and shaping, whereby she observes pupil engagement, interprets what she sees, forms conclusions on how she caters to the needs of all children to develop her approach and reflect on the impact of these changes. These conclusions were based on evidence leading to a more positive experience for pupils, and crucially, for Cara as a learner herself too (Van Es & Sherin, 2021; Aukerman & Aiello, 2023).

This is further exemplified in Cara's reflections on the use of practice three, Reciprocal Reading, where she observed pupils coaching each other, working together and how this supported her less able readers, leading to greater engagement and confidence in these pupils, "I've been blown away with what they can do". This parallels findings by Damrau et al. (2022) who identified that a common thread among their teachers' experiences within Noticing interventions was that all teachers repeatedly over or underestimated their pupils' abilities. In this example, Cara recognised that her own expectations of less-experienced readers were far lower than they should have been, prompting Cara to reflect on the type of task, level of challenge and design of her lessons in relation to these pupils.

Cara was confident to justify her new approach of going with the learners, exploring new texts and texts which they love in equal measure to find a balanced way to support comprehension development, saying,

> There are set things within a curriculum that need to be taught, but I am more open to how I would teach them now…So, I am still delivering what the curriculum wants me to do. However, I am doing it in a more creative, fun and enjoyable way both for myself and the children too. (Cara)

Cara linked her own autonomy with curriculum design, unlocking her own power to design and deliver the curriculum expectations in a way that meets learners' needs. This echoes what Crawford et al. (2005) share, that Noticing helps teachers to become the adaptive experts, able to recognise their own strengths and limitations and respond to this with flexibility. This demonstrates the metacognitive quality of Noticing, as Cara developed the self-awareness of her role and influence over pupils' classroom experience and therefore can analyse what needs to be taught with the contextual environment in which it will be delivered (Portilho & Medina, 2016).

Cara also commented on the natural shareability of the CLPL. She shared that she found the content relatable for teachers, with the practices being easy to implement and the impact on them and their class being high. Cara reported that "So many other teachers have commented on how engaged the pupils are, how they are talking about books at playtime – it's amazing. They all want to know what's made the difference". She emphasised that the different practices were the springboard to a whole perspective change and that the practices had a huge part to play in its success, "[because] they come from research shows that there is merit in the theory behind them. And I can say in practical terms, they worked". This shows that not only did the experience impact on Cara's learning but the informal learning conversations that took place generated reflection and dialogue amongst colleagues, and their observations further added to the shaping taking place within Cara's own Noticing (Kyndt et al., 2016). This is supported within the literature on informal learning as well as the impact on learners being used to kick-start other teachers to reflect and engage in conversations about practice (Clarke et al., 2012). Cara concluded that, "I think the biggest shift has been from me".

4.3 Donna's Experience

Pre-Intervention

Donna was teaching Primary 2 (ages six and seven). She described herself as "highly experienced" teaching for over twelve years and having worked in a few schools and with previous experience within a neighbouring local authority. Donna worked in a school with a mixed catchment, with some of the areas being wealthy and rural and others being more inner city, composed of mostly social housing. She had experience of working in a range of different educational settings during her career and was seeking promotion to Principal Teacher level. At the time of the intervention, Donna was the Literacy Lead for her school and was encouraged by senior leaders at her school to participate as part of her leadership and development work.

Donna described her class as a lovely, fun, cohort with wide-ranging needs and a significant spread of ability. Within the school a very small number of children were taken out for additional support, but the need was growing, and Donna felt strongly that the support provided for these pupils was not enough. Donna, in the pre-intervention interview, seemed unconnected to her role in the provision of support for the most vulnerable learners in her class. She placed the responsibility of provision to support staff and senior leaders. She believed that the increasing need for differentiation was putting a strain on what teachers can manage, stating, "We have seen our attainment in reading and literacy gradually fall and are becoming more concerned our methods are outdated for the level of needs and support our pupils need". This could demonstrate, as described by Miller (2011), 'cognitive tunnelling' whereby Donna narrowed her focus to exclude the lower-ability learners due to the overwhelming level of needs and information pouring in from daily classroom experiences. What this example is also demonstrated is that Donna only

attended to the outcomes she observed in her pupils (Van Es & Sherin, 2002), failing to provide the interpretation or shaping what her observations might mean, and how she could use the information she gathered (Van Es & Sherin, 2021).

Donna could not recall any professional learning opportunities offered that focused specifically on teaching comprehension, reporting that literacy development had not been a focus for years in terms of her own practice and that of learning opportunities available at school and local authority levels. Donna stated that comprehension was the aspect of literacy for which teachers had access to the least amount of guidance. She believed this was "because there are schemes in place, and we have the questions there for the reading books so it's something I feel okay about as you follow on from it". Donna felt confident with the systems she had in place and that the development of new practices was not something of particular significance or need. This shows a limited concept of Noticing, whereby Donna has formed surface-level, unhelpful conclusions on what was observed (Ellis & Simpson, 2020). Recognising that pupil achievement has declined and yet practices remain stagnant over time would not generally coincide with teaching practices that meet learners needs; rather, reflections would lead to further questions and explorations into the impact of practices on learner engagement and outcomes (Gibson & Ross, 2016). Also, using this analysis to experiment, to trial new approaches and explore the impact of this on her teaching and pupils' learning would be seen. This experimental, inquiring stance was not present for Donna at the early stage within her response (Robinson, 2010).

Donna recognised that her view on reading comprehension was traditional and "a little one dimensional". She had a clear focus on the aim of comprehension teaching, "It was always about ensuring children could answer the questions you asked from

the text". She gained this perspective from her initial teacher education and personal school experience. Donna presents a very limited view of what she noticed. In this example she did not demonstrate the criticality, the reflection, at the heart of Teacher Noticing as there is a lack of exploring new ways of thinking (Windschitl et al., 2011). It can be seen to parallel what Korthagen (2017) describes, where teachers can be disconnected from their practice, which in turn leads them to be disassociated from their own actions and influence, as well as the impact on learners. The result being that as Donna was unconnected to her practice, she was unable to improve it. This is also evidenced in her further response when explaining how she implements reading comprehension in her classroom: "It was always recommended to have your different ability groups all on their own texts with specific comprehension questions to meet their level. It's a mark of good practice". Donna felt that this approach ensures children receive targeted instruction for their level and that this provides them with the best opportunity to learn successfully within the subject area. She offered no reflection on whether this is successful and how learning may be evidenced; the reflective quality (Erickson, 1986) was not evident. She recognised that comprehension "is usually an activity which the children traditionally find quite boring; there isn't a lot of enthusiasm for it". Again, as outlined above, there is a disconnect between the pedagogical approach and the impact, which, arguably, suggests there is a lack of reflection and criticality, meaning that teaching and learning are not connected and are not used to promote an inquiring stance (Korthagen, 2017).

When unpacking this further, Donna reflected that some pupils struggle with reading comprehension, whereas for others, "it comes naturally to them". She attributed this to home lives and parental engagement. She pondered why this was the case,

discussing two children she had worked with before. One pupil had a lot of parental support and was able to read effectively but did not find enjoyment in texts and struggled to make meaning from what they read, contrasted with another who enjoyed class stories and looking at books but had low reading ability and never wanted to use their own reading book, often becoming distracted. Both pupils struggled with different aspects of developing their comprehension. Donna struggled to understand what made the difference and why this might occur. It also demonstrates, as Roose et al. (2019) state, that teachers' response to diversity within learners' environments, experiences and interests is important in Noticing. They identified that teachers' beliefs were central to how they perceive classroom events. Donna, at this time, was not able to consider the reasoning behind these differences, or her own role within unpacking these challenges and applying an experimental, inquiring approach to practice to support these pupils (Guerriero, 2017; Jacobs et al., 2010;). In this way, Donna was merely attending to what was taking place within the classroom, with limited interpretation of this information for use in instruction (Van Es & Sherin, 2021).

Donna shared that she found teaching comprehension challenging. She found that,

> Feedback in their jotters and peer assessment allows them to find out where they have went [*sic*] wrong but it doesn't often help them get it right in the next exercise or chapter. That's an area we haven't had any input on. (Donna)

Here, Donna attended to what was taking place, by recognising that some pupils struggle and that the impact of feedback currently provides very little support to these learners (Van Es & Sherin, 2021). This showed Donna thinking critically, analysing her current practices to conclude that this method is ineffective and that there is a pedagogical challenge to be overcome; however, there was a lack of

agency (shaping) on Donna's part to use this information, to seek out new approaches, to broaden her knowledge and make changes to address these aspects of her practice (Van Es & Sherin, 2021).

Donna was Literacy Lead for the school during the time of the intervention, which is a curriculum leader in this subject. She was not formally part of the senior leadership team but supported the development of policy and practices across the school. In the past, this was something she enjoyed, networking and collaborating with Leads in other schools, "actually hearing from them about resources for literacy because that always seemed to be the real issue". She reported that more recently Leads work mainly on high-level policy documents that neglect the practical aspects of classroom life. Here, Donna represented the promotion of a blue-print for comprehension teaching that is removed from the personal, the affective nature of teaching and learning, and, instead, supports a 'one-size fits all' approach that is formulaic and can be rolled-out systematically. In contrast, important components in the learning process for teachers include, that learning is context driven, derived from teachers' current experiences, and pupils' needs, learner-centred and scaffolded (Timperley et al., 2007).

Donna enjoyed engaging in inquiry projects at school in the past. These were valued and promoted, and teachers were given time to explore and collaborate. However, she contrasted this with the situation she found herself in at the time of the interview, with a lack of time and funding to embed this work, stating, "All these things are great ideas but don't get followed through." Donna believed this type of learning was very important and worthwhile, "I like the investigating change idea, colleagues are always more likely to listen when you have tried something out and can share its successes and challenges". This showed that previously Donna found benefit in the

process of inquiry, of taking time to undertake experimental work within classrooms, sharing findings and learning together – core components of successful teacher learning (Alvunger et al., 2017; Colley et al., 2003; Menter et al., 2011; Tay et al., 2023). It seems, however, that Donna's limited Noticing capacity could have affected the impact of her previous inquiry work. Engaging fully in inquiry for the intrinsic benefits to teacher and learner can support teachers as inquiring professionals who are active and empowered in their own decision-making with sound reflection as a basis for improvement (Carr & Kremmis, 1986). This transformational quality was not evident within this response. Coupled with the lack of detail provided from her memory of any of these inquiry episodes, the effect on her Noticing appears to have been promising but minimal.

Donna was interested to pinpoint "what's working well, what's making a difference and for whom" and that it is very important for teachers to be "stepping back and looking at learners and the impact of what we do each day".

Post-Intervention

Following the intervention, Donna reported that her perspective on the aim of comprehension had shifted:

> It isn't just about answering questions to check you understand. It's about understanding what that story means to you and that's not a right or wrong thing, and access to engage shouldn't be determined by your scheme book level. (Donna)

Donna felt more skilled in designing her curriculum, exploring the aims and "reasons behind comprehension teaching", and that she was more able to select appropriate activities to support a wider view of comprehension than before. Donna felt that after

engaging in the experience she had become more "flexible and creative" with her teaching and that her teaching was now "driven by my pupils and what they know and bring". She was able to use the 'reflection and action' process to demonstrate how she used what she noticed to shape pupils' future experiences, informed by shifts in her own thinking (Van Es & Sherin, 2021).

Donna shared that she has thought more about the purpose of her comprehension lessons and used these to select the most effective practice to implement. She thought that because each practice has a clear purpose, she could target her input more effectively to what pupils needed, recognising that "different activities are important for different reasons and it's about making my curriculum more varied and responsive to what the pupils need". Donna reported that she had come to recognise that there are different approaches to foster reading comprehension than she had initially thought, recognising that having different 'ways in' was important for learners. In this way, Donna's experience supports the thinking of Portilho and Medina (2015) whereby metacognitive thinking helps teachers reflect on how they learn, and therefore how they teach, becoming more empowered in their own pedagogical decision making. Through her engagement, her understanding of how to teach reading comprehension also changed. In findings similar to Basit (2003) and Earl et al. (2003), through engaging in an inquiry intervention, Donna thought differently and recategorised what she classed as effective teaching in this area. In this instance, Donna was able to challenge her previous assumptions with evidence from her reflections in the classroom, evaluate what she had noticed and use this to develop her practice and promote wider thinking in relation to comprehension teaching generally – demonstrating the transformative quality of Teacher Noticing (Gibson & Ross, 2016). This shows Donna attended to her practice and providing an

interpretation of the impact of the new approaches. Crucially, she was able to use the information to shape pupils' experiences and her own thinking for the future, thereby demonstrating the three core components of successful Teacher Noticing (Van Es & Sherin, 2021).

Donna shared that, previously, lower ability pupils would not be expected to engage in the same sorts of comprehension activities as more able pupils, as she had believed that pupils' reading ability was a direct link to their comprehension ability. Donna reported that through engaging in this CLPL she recognised that this is not always the case. She changed her view to suggest that the aim of reading comprehension is not for everyone to see a story through the same lens; rather, meaning making is personal and built on experiences. This supports previous research that Teacher Noticing can support teachers to consider their own beliefs, expectations, and practices in relation to promoting equity and learner expectations in classrooms (Roose et al., 2019). More so, Donna's experience echoes that of teachers within an intervention led by Van Es et al. (2017) in which they identified that teachers shifted in their status and positioning within the classroom including pupil groupings, ability and participation and engagement within lessons and how this is influenced. She reported that as a result of the CLPL sessions her expectations of pupils' comprehension abilities were significantly higher, particularly for those less-experienced readers. She felt this impacted not just on her comprehension lessons, but her view of less-able pupils generally. This demonstrates that Donna was able to connect her experiences to understand what was going on in the classroom and to use this information to understand what was happening and include it in her next steps (Jacobs & Spangler, 2017).

Donna took time to reflect on her own role during this interview. She noticed that she provided few support opportunities and experiences for the lower-ability pupils in her class and that she did not take enough notice of their experience or what was on offer for them in the classroom. She felt that following the intervention, the pupils receiving extra support outside of the classroom had their reading comprehension needs best met within the whole-class environment with new approaches and more purposeful teaching. Donna attributed this shift to the implementation of practice one and two when she explored the 3 Sharings and developed Cultural Capital through introducing Everybody Reading in Class time. This was a significant turning point for Donna in the awareness of herself as a learner (Portilho & Medina, 2016), using this to transform her teaching (Alvunger et al. 2017). Donna reported that being more creative had helped her to become more inclusive as children engaged in activities such as drama for all. Donna now favours "more creativity and high engagement activities for everyone rather than disengaging, repetitive activities that lower ability groups often have to tolerate". This demonstrated her Noticing as Donna had developed her ability to problematise her own practice (Ellis & Simpson, 2020). She had changed her perspective to one in which the less-experienced pupils need more of the rich experiences she described. She was able to use her reflections to consider the wider pedagogical considerations she delivers through the lens of equity to show impact of the experiences on her thinking and subsequent experiences provided for her pupils. This mirrors what Basit (2003) and Earl et al. (2003) found, that developing a reflective and inquiring stance not only impacted on pupil engagement and attainment, but the experiences began to shift what the teachers in their study thought effective maths teaching was, though for Donna this was in the context of teaching comprehension. In this way, similarly to Timperley et al. (2007),

the learning experience helped to shape Donna's conceptual framework for teaching reading comprehension successfully.

Donna referred back to the pupils she discussed in the pre-intervention interview. She commented that she felt far more confident in supporting her pupils who face challenges in their reading comprehension. She discussed her capable reader who was often disengaged and distracted when reading his reading book. Donna came to realise that she had not taken time to look at her class reading corner and how it did not promote reading as fun. She also learned this pupil loved dinosaurs but there were no dinosaur books available. When she provided him with more texts and a revamped reading space he was far more engaged. She even reported that the child's gran had commented on how excited he was about the dinosaur books in the class. This demonstrates that Donna has attended to her observations, interpreted these accurately and used these to make future decisions which she found to have positively impacted on the child's experiences, ultimately reinforcing a new way of thinking for Donna (Van Es & Sherin, 2021). Donna's experience mirrors the findings by Van Es and Sherin (2021) where, as the intervention progressed, it was evident that what teachers paid attention to shifted. For Donna this meant focusing more on pupils' thinking, learning and experiences and paying less attention to seemingly superficial observations.

This was also evident in how Donna discusses the impact of the intervention on herself as a teacher, sharing:

> For me, it's been fantastic to develop my own understanding of what we do and why we do it. I guess, though, it's more worrying that if I hadn't engaged; I wouldn't have really evaluated that. (Donna)

Here, Donna showed that she found the intervention impactful as it helped her to gain a fresh perspective on what information she uses to base her decision making, as well as how she uses classroom events and responds to what she has interpreted (Jacobs, 2017). Donna described the CLPL as an experience which "allowed me to really look at what was going on", becoming more aware of her strengths and limitations and being able to respond to this adaptively and flexibly (Crawford et al., 2005). She reflected that the intervention supported her to be more "creative and autonomous" and more self-assured in making "professional decisions for you and your pupils".

Donna concluded with some advice for others:

> I've learned not to be afraid of doing something new in the classroom. Just go for it and try to make it your own. It may take a good few lessons to really be comfortable with it and be able to step back and evaluate, but it will be worth it. (Donna)

This shows that Donna recognised the value and relationship of learning on teaching and teaching on learning (Lampert, 2010), leading to transformational change within her own thinking and subsequent pupils' learning experiences, indicating successful Noticing (Tay et al., 2023).

4.4 Allison's Experience

Pre-Intervention

Allison was teaching Primary 6 (ages nine and ten) at the time of this intervention in a large school in a semi-rural town with high levels of poverty. There was high unemployment in the area and a high number of children receiving free school meals as well as poor attendance across the school generally. Allison had taught this stage a

few times, was in her seventh year of teaching and had a wide range of additional support needs within her classroom. She had only taught in this school.

Allison was prepared for our interview; when I arrived, she had planning documents, examples of pupils' work and resources laid out on the table to showcase her current practices. Her enthusiasm and passion for teaching came across within our first meeting. She felt that teaching approaches are always dependent upon the pupils within a specific class and, therefore, a one-size-fits-all approach is rarely successful, as Guskey (2000) argues. Rather, Noticing is about teachers making sense of the information they receive, problematising it and making use of this to improve learner experiences (Gibson & Ross, 2016). Allison believed that fostering pupil engagement is essential, and that this applies to all curriculum aspects, not just reading comprehension. Allison explained that within her own practice, she had achieved this in a few ways, for example, using pupils' interests, making lessons interactive and keeping approaches varied. Allison was able to demonstrate a level of self-awareness within her practice from the outset, where over time she had considered her own learning through engaging in new approaches, reflecting on the impact and forming some conclusions based on what she noticed in classroom experiences (Kramarski & Michalsky, 2009). This already placed Allison with more components of Teacher Noticing than Cara and Donna at this stage because she was attending to, infer and, to an extent, using this information to shape the experiences her pupils received (Van Es & Sherin, 2021).

Allison felt that the most important part of her reading comprehension lessons were teacher-supported, "where we are actively discussing, going really in-depth in the text with the author's message and strategies". Yet this understanding was not always the case when she first started teaching. She understood that part of comprehension

teaching involved pupils engaging in answering questions from a text but was keen to point out that this alone was not effective. Allison demonstrated an awareness that having a variety of activities was essential for meeting learners' needs, demonstrating an understanding of Noticing for equity (Van Es et al., 2017). In similar findings, Allison was already aware of and responding to information she received in relation to pupils' status, participation, and engagement (Van Es et al., 2017). She implemented different strategies to make her lessons engaging, for example, incorporating teacher-pupil discussions about text as well as some sessions involving drama to help the children understand the characters they were reading about. The combination of these methods, alongside more traditional question-answer sessions is, as she saw it, an effective mix. She shared some examples of the different tasks she had tried during the year as well as speaking through some examples from previous years. Allison was already demonstrating the ability to notice in a meaningful way and clearly used what she noticed to plan and devise her lesson structures, thereby demonstrating the three components of Teacher Noticing: attending, interpreting and shaping (Van Es & Sherin, 2021). This supports what Jacobs et al. (2010) propose is an essential component of Noticing as it aims to 'make sense' of the complexities at play, which Allison evidenced within her response. She discussed the rationale behind her current approaches and applied a level of criticality that she used to adjust what she was doing previously. She also made attempts to consider why and how practices within reading comprehension develop, showing a high level of Noticing and recognition for her pedagogical decision making (Van Es et al., 2018).

Allison reported that she felt there are often pupils in the upper school that find comprehension "boring", "and I think children attach that stigma to it, depending on

their experiences". Therefore, she argued the upper-school teachers in her school often had to undo the negative attitudes that pupils had developed from earlier experiences with reading and comprehension to promote engagement on which to build. Allison demonstrated a high degree of Teacher Noticing through being able to notice the "energy and flow of students and the class" to inform her instructional approaches (Van Es et al., 2017, p. 266). She shared that she often saw children "coming in with such negative attitudes towards it [comprehension] and not seeing it as something useful and purposeful". This shows that Allison could observe (attend) this from her experiences to understand what her observations meant (infer) (Van Es & Sherin, 2021). What is missing, is how she used this information, what she took from this and how she applied what she had noticed; this would help to strengthen her Noticing ability and provide detail to understand the shifts she made and their impact, the shaping of future experiences (Van Es & Sherin, 2021). She stated the importance of making learning fun, saying,

> I think that if I'm not enjoying teaching it, I don't think and know if the kids are enjoying learning it. So, I've tried to bring in things that I can show enthusiasm for to then get that from the kids and I think that's a journey I've been on myself. (Allison).

She reflected that the crux of the matter is teacher confidence. She suggested that often colleagues who prefer teaching maths are not as confident with teaching literacy, proposing that "I think, as a primary teacher, it's hard to have the same level of expertise across all subject areas and so when we put anything new in place it always lands differently". Allison demonstrated a high degree of Noticing within her statements. She was able to connect her own learning and her pupils' experiences, combined with reflections on why this would be the case and what underpins this in

practice. She was able to focus on what is important, analyse it and use this to inform her thinking (Korthagen, 2017). Allison also seemed to recognise the subjectiveness of what takes place in the classroom, recognising teachers' own qualities, knowledge and confidence and the impact they have on what she notices and how she responds (Star et al., 2011).

Allison reported that she felt "reasonably confident" with her current practices but was always looking to develop further. Her barrier, at the time of the pre-intervention interview, was that she found it challenging creating tasks for 'poorer readers' as often the texts were basic and the pupils who display low-level, disruptive behaviours ended up in the same group, so keeping them engaged and on-task was challenging. Allison felt she required more knowledge and skills to support her teaching of reading comprehension. She was able to demonstrate that she had attended to a wealth of data from her classroom experiences and interpreted this to try and understand the challenges. She also identified that moving forward from this, with new practices and knowledge would help her to shape future pupil experiences to address what she has identified (Van Es & Sherin, 2021). She also demonstrated a sense of intentionality, essential for successful Noticing, where she "seeks to learn as well as to teach" (Aukerman & Aiello, 2023, p. 10).

Allison reported that her thinking changed the longer she taught, but that she always looked for ways to improve her approaches and increase engagement. She made use of internet websites and platforms to support this and believed these methods helped her to implement new activities within the classroom to promote engagement. Two years ago, Allison implemented an evidence-informed practice at whole-school level, 'Book Detectives', an adapted model of Reciprocal Reading. Allison and her Deputy Headteacher were inspired by another school that had successful results with the

approach. They both identified that pupil engagement in comprehension activities was declining, and their overall attainment was poor within this area. Allison suspected this was because previous approaches were no longer fun for the children or were varied and interactive enough. Allison worked with the Deputy Headteacher to organise the resources in a progression map and taught teachers to implement the approach.

She shared that while the initial impact was positive, the approach provided very little impact on pupils' ability to comprehend stating that "when it came to Teacher Professional Judgement and our data, we didn't see the impact we expected, so we shelved that". Additionally, she felt that not all teachers embraced the approach. She was clear that the intention to change practice, to implement a new creative, interactive approach was there, alongside support from senior leaders, but this approach failed to deliver the expected outcomes and therefore was no longer compulsory, leaving teachers to choose whether or not to continue. This highlights what Riverin and Stacey (2008) identified as a problem with informal learning experiences, where the theoretical underpinning of an approach or concept is not translated when others try to replicate it. Allison shared that, "We have tried to replicate the success from others, but it just doesn't seem to have transferred to our context." A core stumbling block Allison proposed was that there was no theoretical basis for how and why the approach should be implemented, meaning they struggled to identify why it was not successful, which resulted in the teachers becoming isolated with some continuing to use the resource and others shelving it. This supports Spitzer (2011) who states that teachers need to be supported within their own learning context to achieve higher levels of thinking and growth and that transmission approaches to teacher learning are rarely effective.

Allison highlighted that the second practice, using Cultural Capital, was an aspect she was excited to explore. She commented that it is an aspect of curriculum design that she does not feel gets enough attention, and that teachers do not really have the knowledge or skills in this area generally,

> I don't think there's enough done to meet the Cultural Capital side of things. I don't often think that we even considered it when we think about comprehension. It's more about what we want from them than what they are bringing. So that's a key one for me. (Allison)

Allison attended to the lack of practices and approaches that support this; however, she had not interpreted or shaped these observations, nor had she attempted to explore or experiment to tackle this identified area, demonstrating a limited Noticing perspective in relation to this area (Va Es & Sherin, 2021). Allison certainly came from a higher starting point in terms of Noticing than the other two teachers, as she evidenced elements of Noticing from the outset, but this was not the case for all responses shared.

Post-Intervention

Allison reported that the intervention helped her to realise that because of the reading ability of the lower ability pupils (the ones that struggled with reading comprehension), they were never given the opportunity to engage with texts and experiences at a higher level. Those pupils were consistently, year after year, given more opportunities to develop their reading practice in the hope that it would help to develop their comprehension, implying that decoding ability translates as meaning, yet she realised that both the skill of decoding and that of comprehending are not the same. Allison showed a high degree of Noticing as she could recognise that her

pedagogical choices negatively impacted on what her pupils were exposed to and connected this to the further reduction in types of opportunities those pupils faced. She reflected on this, related it to her previous choices and her current thinking, and used these reflections to problematise her own practice and make informed decisions for future planning to impact positively on her pupils' experiences, which are key components of higher-level Noticing (Gibson & Ross, 2016). This demonstrates the three core components 'in action', using what she has attended to, interpreting this information and using it to shape her own thinking, decision making and, ultimately, pupils' future experiences (Van Es & Sherin, 2021).

She learned that grouping children based on interests was new and impactful, stating, "I think the majority of the time I will group them by their interests now, which has really increased their engagement". Allison felt that using ability groupings too often not only limited what she thought of their ability, but what pupils did too, and by mixing it up, pupils were more engaged with peers. Allison used her observations of what she noticed from pupils' engagement and inferred from this to shape her pedagogical decisions (Van Es & Sherin, 2021). She was able to zoom in and out of the classroom with enough detail to make conclusions based on individuals and use what she learned as a springboard for her thinking and future lessons (Van Es et al., 2017). She reflected that at university there was a focus on differentiation but that teachers get stuck with only a few ways of how to deliver that in the classroom, whereas looking at groupings had been significantly impactful for her. She shared a proactive stance to taking what she had learned and applying it to future decision making and planning. These findings parallel Van Es et al.'s (2017) study within mathematics Teacher Noticing, where, teachers developed their perspectives on pupil status and positioning within the classroom, including pupil groupings, ability,

participation and engagement within lessons to influence pedagogical decision-making within the classroom. From an equity and inclusion perspective, Allison's findings also support research conducted by Roose et al. (2019) who demonstrated that teachers' pupil grouping sparked reflection and new perspectives.

Allison commented that she felt her curriculum allowed her to meet the needs of her pupils more effectively as she could think more about what her pupils needed and had more approaches to use to provide the appropriate learning experiences. It had also helped her to be more creative and more varied in her practice. She felt more confident in knowing "what is being taught and, crucially, why, the theory behind it, to get a balance that meets the pupils' needs of your class". This shows that Allison was able to 'put everything together' (Erickson, 2011), gaining awareness of the influences of teaching on learning and learning on teaching, showing a high degree of Noticing ability. Subsequently, this led to a shift in what Allison thinks effective comprehension teaching is. In this way, the intervention supported Allison's Noticing abilities by helping her to reflect on the purpose of comprehension teaching and therefore adapting the methods she employed to include a new perspective and approach, echoing Lloyd and Mukerjee (2012), and Loughran (2002).

Allison shared that, as she had predicted within her pre-intervention interview, using Cultural Capital (practice two) provided her with the most valuable learning within the intervention. She felt that practices one (the 3 Sharings) and three (using Reciprocal Reading) provided extension, reassurance, and further scope to her existing provision, whereas practice two provided a new lens to extend her comprehension lessons to a new way of valuing pupils' responses to texts. She stated that the concept of using Cultural Capital was "hugely influential" to her,

It's turned the approach upside down from thinking about where they need to be to what do they know and how can I use that as a basis for learning. That is something new and exciting and has had the biggest impact on my own practice. (Allison).

She reflected that when looking at an individual pupil's experience more closely, she was able to see that she had previously thought they did not possess the understanding of the text when, in fact, they were disengaged because they were uninterested in the texts on offer. This demonstrates each component of Noticing: identifying what is important; connecting it to teaching, learning, pupils' interests; and reasoning from this by using this information (Van Es & Sherin, 2002). It also parallels findings by Van Es et al. (2017) where the greatest gains in teachers' Noticing abilities were evident. They were able to explore individual pupils' experiences and interests to use these in teaching. It also parallels findings by Damrau et al. (2022) where all teachers within their intervention did not accurately estimate their pupils' abilities and, therefore, they did not hold appropriate expectations for them.

Practice three focused on Reciprocal Reading, which was reported to be the least impactful for Allison. She reported that she supposed this was due to her previous attempts to implement a similar reciprocal approach (Book Detectives) within her school and therefore providing children with strategies to develop their comprehension was not new to her. Allison reported that having access to the theory of the approach helped to implement it in a more appropriate way than before because she explained that she had missed the role of the scaffolding adult, having treated it as an activity without the underpinning theory. Allison said that often when schools share best practice they move further from resources' theoretical

underpinning. She recognised that the theory is fundamentally important in ensuring that practices are implemented correctly. This parallels González et al. (2005) who argue that understanding the link between theory and practice is crucial for successful teacher learning. Therefore, providing teachers with access to the conceptual knowledge they can apply in their own setting brings the theory into the classroom and the development of teaching practices supports reflection, which in turn generates learning. Allison spoke highly of the style of the intervention in helping teachers to "own[ing] approaches: just as pupils are different, so are teachers and so helping them adapt and be flexible makes it more effective and beneficial for the children". This demonstrates Allison's awareness of how teachers, and learning, are both affected by and affect the environment (Kelly, 2006).

Allison thought that teachers would be able to take something new and extend their current practices through the CLPL experience and that the balance of flexibility and consistency allowed this to happen. She reported that her lessons became less "structured and rigid", saying she spent more time considering her pedagogical decisions and implementing further strategies beyond the scope of the intervention CLPL sessions,

> For example, I've now introduced more drama. It's more extended and whole-class and really the focus of the learning, which is new, and that's because the kids just loved it and got so much out of it. I've also introduced code spaces, which I love, and the kids love it…And I wouldn't have looked into and really started to extend these if it wasn't for this [CLPL course] focusing on comprehension. It's really highlighted to me the importance of getting this right. (Allison)

This demonstrates what Davis and Sumara (2003) show, that as teachers become more involved in the learning process themselves, they start to consider their practice and pedagogical decisions more widely. Indeed, Allison also questioned whether she was becoming 'better' and what this might mean for her and her pupils. In this way, she demonstrated effective Teacher Noticing as she saw herself as a learner as well as a teacher (Aukerma & Aiello, 2023).

The importance of reflection further resonated with Allison. She reported that engaging in new practices supported a natural reflection process that can become diluted as approaches become embedded, demonstrating that Noticing is a learnable quality that supports teachers as learners (Jacobs & Spangler, 2017). She reported that the practical nature of the intervention and the prompt questions supported reflections to explore teaching and learning, and that pupils and their experiences were at the centre, making it "relevant and responsive". Allison concluded that the reflection was critical,

> …it was in the reflection that I could really change my practice and inform my planning and that ensured my practice was gaining effectiveness. I think that would stop teachers becoming a bit numb as we would be able to pin-point our areas for development much more quickly before the disengagement occurs and that would save us all a lot of time away from teaching and learning as we are having to go back and re-build that engagement. (Allison).

Allison demonstrated a level of criticality and showed that she benefited from the intervention. She evidenced that she values and recognises the experimental quality of Teacher Noticing (Spitzer et al., 2011). This suggests that Allison, with a renewed sense of autonomy, creativity and empowerment, recognised the role of teachers in

leading their own curriculum design. According to Lieberman and Mace (2008), these are desirable qualities for teachers to make a difference. She acknowledged:

> I think I may have been stuck in a rut myself, although it's all new to the kids. I had been doing more or less the same thing for the past three years now and actually it has been good for me to try out different things. I really enjoyed the process. (Allison)

This chapter has shared the narrative accounts of each teachers experience in relation to Teacher Noticing, sharing what they learned, as evidenced from their experience. Within chapter five, I explore how these responses can be represented upon two frameworks for Teacher Noticing: the LTNF and the MTN, prompting evaluation and discussion.

5 Findings: Evaluating Noticing Levels

Within this chapter, I demonstrate how the narratives provided within teachers' accounts can be represented within Teacher Noticing. Teachers' responses were categorised and plotted onto the LTNF (Van Es, 2011) and onto the MTN. This demonstrates how the accounts are represented on both frameworks, allowing the benefits and restrictions of the Matrix to be evaluated against the LTNF. Both visual representations are displayed in parallel to allow comparison and to illustrate the extent to which the Matrix can represent teacher learning more accurately. Commentary is provided on the placement and categorisation of responses on both frameworks. This allows me to make recommendations, highlighting any areas for future development within the new Matrix.

Each response was evaluated against the criteria set out within both frameworks. The descriptors of the LTNF are found in Figure 7.

	Level 1	Level 2	Level 3	Level 4
	Baseline	*Mixed*	*Focused*	*Extended*
What Teachers Notice	Attend to whole class environment, behaviour, and learning and to teacher pedagogy	Primarily attend to teacher pedagogy Begin to attend to particular students' mathematical thinking and behaviours	Attend to particular students' mathematical thinking	Attend to the relationship between particular students' mathematical thinking and between teaching strategies and student mathematical thinking
How Teachers Notice	Form general impressions of what occurred Provide descriptive and evaluative comments Provide little or no evidence to support analysis	Form general impressions and highlight noteworthy events Provide primarily evaluative with some interpretive comments Begin to refer to specific events and interactions as evidence	Highlight noteworthy events Provide interpretive comments Refer to specific events and interactions as evidence Elaborate on events and interactions	Highlight noteworthy events Provide interpretive comments Refer to specific events and interactions as evidence Make connections between events and principles of teaching and learning On the basis of interpretations, propose alternative pedagogical solutions

Figure 7 - The LTNF (Van Es, 2011)

The literature reviewed within Teacher Noticing presented a strong case for the development of a new framework to address the challenges and criticisms that have plagued the field (Amador et al, 2020; Konig et al., 2022; Sherin & Star, 2011; Wei

et al., 2023). These same conflicts and challenges were evident within my own experience of using the LTNF (Van Es, 2011).

As I transcribed the data myself, I developed a secure understanding of the experience of each teacher. So, when I went to map my data onto the framework, I experienced several problems with the LTNF (Van Es, 2011). I found it challenging to apply the framework to my own data as I noticed that not all the teacher responses fitted neatly into the categories of the framework. The LTNF presents Four Levels from Novice to Expert and focuses on the two key aspects of what and how teachers notice. I felt that in some instances statements did not fit where I felt they would be best placed; in some cases, this meant a response either being rounded up or down based on the weight of either what or how they notice. This resulted in the data and the framework not working in alignment. I, therefore, became more concerned that the framework was not sufficiently representing the teachers' experiences.

Taking account of the challenges I found when using the LTNF (Van Es, 2011), I devised the MTN (Figure 8).
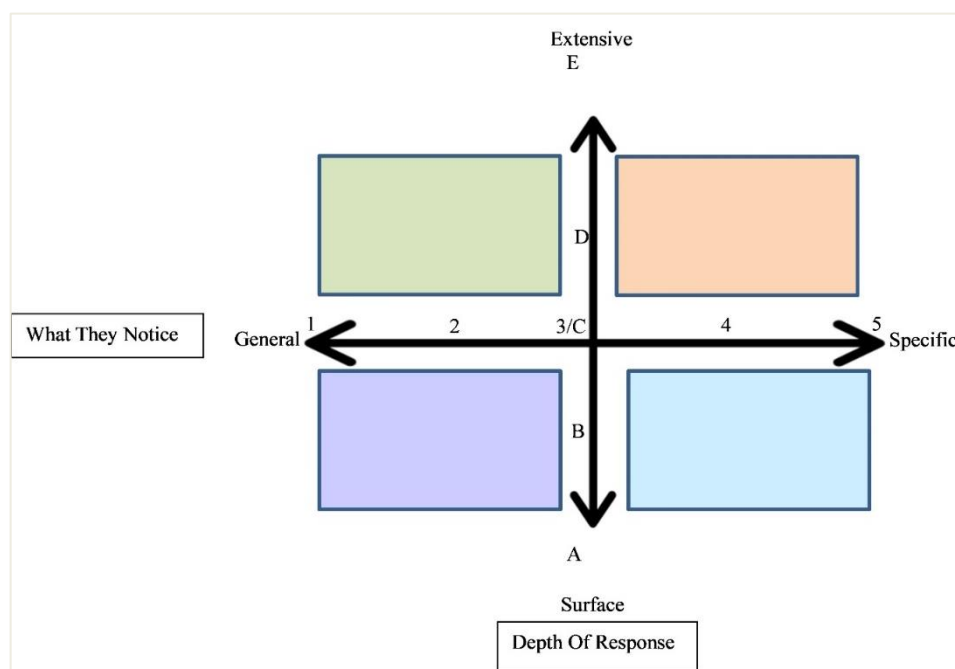
Figure 8 - The Matrix for Teacher Noticing

The Matrix presents a multidimensional model for identifying where teachers lie within a continuum which charts what they notice against the depth of their response. The Matrix is able to unpack the complexity of Noticing (Sherin & Star, 2011) which simplistic, singular numerical models fails to afford. More so, the increase in qualitative options helps to add detail that can often be missed in more simplistic models (Amador et al., 2020; Scheiner, 2016). It advances what Kersting et al. (2016) promote, where a new framework could help explore new methods, leading to new insights into the field itself. In this way, the MTN helps address the vagueness that makes Teacher Noticing frameworks difficult to apply (Wei et al., 2023).

Both axes within the Matrix are plotted separately, charting two key aspects of Noticing: what teachers notice and the depth of their response. The MTN charts both aspects separately, on two different axes, and therefore both are plotted independently of each other to generate an overall grid point of what is noticed and the depth of the response. I also augmented the criteria to have five categories per aspect. To make things easier for categorisation, the x-axis charted what teachers notice, over five categories from general to specific (from 1 to 5), and the y-axis charted the depth of the response (from A to E). Responses within the Matrix were scaled, meaning that the size of the blue dot represents the number of responses made within that exact grid point out of the overall number of responses within that data set. Meaning that the larger the blue dot, the greater the number of responses from that data set were at that grid point. Where both axes meet on the graph creates a quadrant of the aspects of Noticing, in which there are four, as seen in Table 3.

Matrix Aspect	Quadrant Colour
Specific-Extensive	
General-Extensive	
Specific-Surface	
General-Surface	

Table 3 - The Four Quadrants of the MTN

An example of this can be found within Appendix 5.

I agree with Van Es (2011) that *what* is noticed is important. It is important to look at the perspective from which teachers view their classroom events. Are they, for instance, Noticing the whole-class view? Are they able to consider the impact of practices on more able readers? Or, are they drilling down into an individual's experience and connecting this back to the wider pupil dynamic?

Where I disagree with the LTNF (Van Es,2011) is the way in which it charts *how* teachers notice. This aspect adds a complexity that can hem responses into a tick box approach leaving a higher degree of inaccuracy. Plotting on a Matrix of what is noticed and also the depth of the response would provide a more holistic approach to exploring the data, demonstrating the complexities of responses in a more fluid approach. Charting the *depth of response* means that there is scope to recognise the criticality and problematising that is taking place. Moving without the specificity or referring to a single event, interaction or occurrence, the specificity within the Matrix relates to what teachers notice. Within the LTNF, how teachers notice becomes far more focused on becoming specific in their response, instead of reporting generally

on what happened, it centres on using isolated notable events, drawing these out and using these as the focus of the problematising. An example of this can be found in Appendix 6.

After I designed the Matrix, I needed to apply it practically by re-plotting my data to see not only how this showed the impact of the experience, but also if this allowed for the data to be represented in a more dynamic way. To do so, I had to create my own way of defining each aspect and subsequent categorisation criteria. I took inspiration from the criteria within the LTNF and the challenges I found in its application. The MTN criteria are shown in Table 4.

Matrix Aspect	Quadrant Definition
What They Notice	
Full General 1	• Responses that are general, sharing observations and comments that relate to the whole class. • The perspective of view is that of a 'birds-eye', looking down on the classroom from above, having an overall sense of what happened and why, but not using anything specific to support the conclusions made. • Comments also remain at a general level, from a pedagogy and practice perspective, teachers do not look more closely at content, teaching strategies or classroom practices.
Partial General 2	• Responses generally still reflect the whole-class picture. • If there is mention of smaller groups within the overall lesson, these comments are not explored in sufficient detail. They do not become linked to the bigger picture and sit in isolation, lacking coherence between the individual and collective experiences of pupils.

Matrix Aspect	Quadrant Definition
Middle 3	• Responses at this level present a more balanced perspective, there is a greater sense of focus from the wider classroom to starting to focus on smaller groups and even identifying an individual interaction as significant. • Reflection between teaching and learning principles are beginning to come through from that of whole-curriculum and strategy level to more specific to the context.
Partial Specific 4	• Responses at this level demonstrate teachers' ability to start to focus in on key aspects that are problematic. • There is a growing focus on groups and individual pupils within the lesson, their interactions and what is observed. • In terms of pedagogy and practice, there is far greater reflection on the strategies, curriculum, and practices at play and these are discussed in relation to what is observed, connecting teaching and learning previously not evidenced.
Full Specific 5	• At its most specific, the perspective shifts from that of an outsider looking over the whole lesson, to that of a zoom lens focus, being able to pinpoint and isolate specific noteworthy events and interactions as the basis of reflection, analysis, and criticality. • The teachers' ability to problematise comes from their ability to zoom in and identify these specific moments to analyse and draw conclusions from. They are able to provide a balanced reflection of the wider experience and also that of significant individuals and groups.

Matrix Aspect	Quadrant Definition
Depth of Response	
Full Surface A	• Responses provide little or no analysis of what is observed, there is no interpretation. • There is a lack of evidence of critical thinking, reflection, and analysis at this stage. • Conclusions are often formed on the basis of minimal evidence and wider considerations and implications are not considered. • Reflections lack any real depth of exploration, resulting in conclusions that are largely superficial in nature and are unsubstantiated. • Reflections do not show links to the impact on pedagogical future choices and decisions.
Partial Surface B	• Responses begin to show a level of reflection of what is observed. This is not explored or problematised. • There is still a lack of interpretation and analysis to unpick, explore what reflections mean, and how they can be used. How they inform teacher decision making is not evident. • Although noticing is becoming more focused within the lesson, the analytical and reflective stance, the 'so what' of the comments have yet to be explored.
Middle C	• Responses see the emergence of criticality. • Reflection is more in depth with teachers able to interpret events and provide a more balanced view on what is taking place. • There is an attempt made to explore alternative explanations and applying reasoning to form conclusions to a limited extent.

Matrix Aspect	Quadrant Definition
Partial Extensive D	• Responses demonstrate criticality applied to what is observed and looking for alternative explanations and applying reasoning to form conclusions. • Interceptions are supported with evidence; analysis is undertaken to support conclusions. • There is evidence of reflection and analysis on a deeper level, where teachers are starting to think about teaching and learning as inter-connected at a deeper level. • There is greater consideration over what teachers do and why, and how they can use this information to inform their decision making.
Full Extensive E	• Responses show where teachers consider the 'so what' of what they have noticed and how they have used their interpretations. • They respond to what they see with strong analysis and evidence to support conclusions. • Through reflection, they dig deeper into what this means for their practice, how this supports their future decision making. • Connections are made between what happens within a small part of the lesson to the real, 'big questions' within teaching and learning.

Table 4 - The MTN Aspects and Criteria

The MTN seeks to build on the potential within the field but also to address criticisms and challenges of the most prominent framework. In doing so, it contributes something new and unique to the field and aims to further illuminate the 'black box' of Teacher Noticing (Scheiner, 2016) by more accurately representing teachers' experiences and providing further insight into high-level Noticing.

A summary of how I assigned responses to levels or quadrants on each construct follows.

The LTNF (Van Es, 2011)

This framework charts what and how teachers notice across four levels. Each response is given an overall level from Baseline to Extended Noticing (measured from 1 to 4). Within this framework, I selected a colour code for each level. I then categorised each response by highlighting the colour of the level to which it corresponded using the criteria of *what* and *how* teachers notice. I used Nvivo to calculate the number of responses at each level and calculate their proportion of the overall responses within each data set. I then converted these into percentages to show the proportion in comparison to the overall number of responses resulting in a completed graph for each data set.

A Matrix for Teacher Noticing

This framework charts what teachers notice and the depth of their response separately over five descriptors. For what teachers notice, there are five descriptors, from general to specific (measured from 1 to 5), and for the depth of their responses there are five descriptors from surface to extensive (measured from A to E). The Matrix charts both aspects separately, on two different axes, and therefore both are plotted independently of each other to generate an overall grid point of what is

noticed and the depth of the response. Each response is plotted as a dot within one of four quadrants. These are scaled; so, the larger the size of the dot, the higher the number of responses with that grid point were identified.

5.1 Cara's Experience

Pre-Intervention	Pre-Intervention
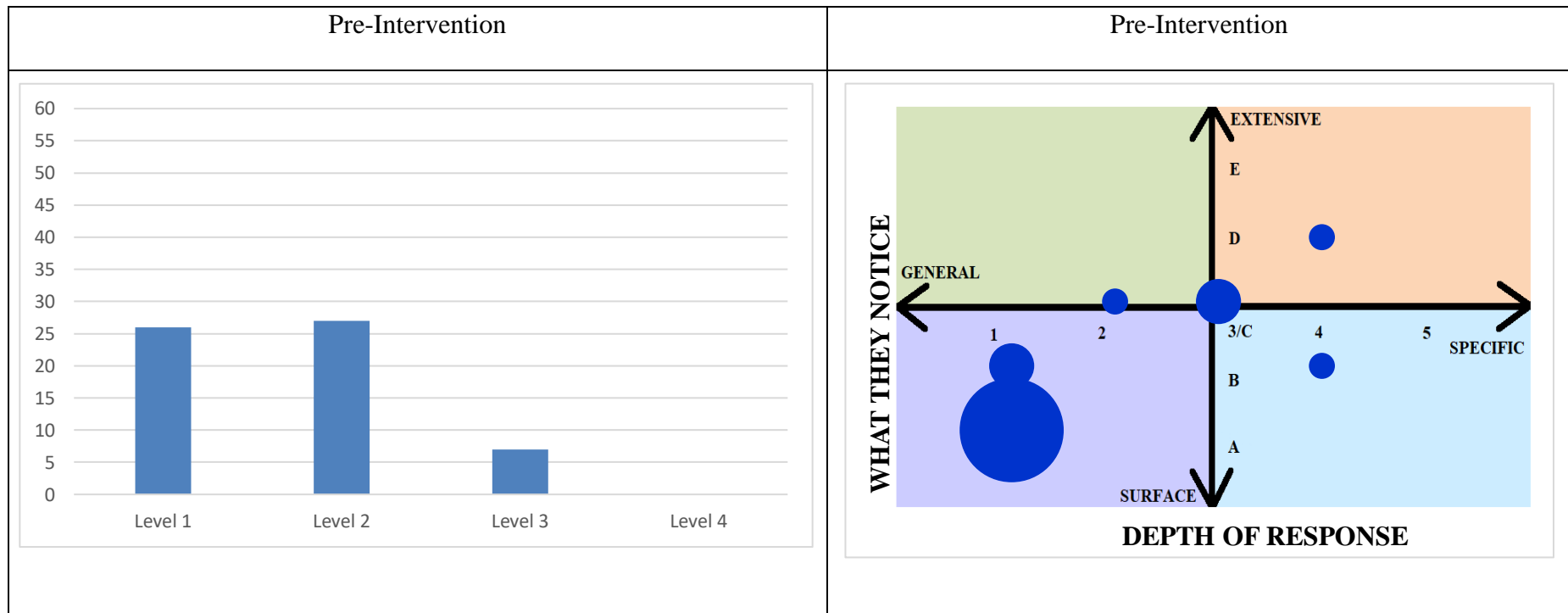
Pre-Intervention

Cara's reflections of her experience are shared below. Figure 9 illustrates the responses categorised onto the LTNF (Van Es, 2011) and also the MTN at the Pre-Intervention stage.

Figure 9 - Cara Pre-Intervention data

Cara's reflections of her experience are demonstrated below. Figure 9 demonstrates the responses categorised onto the LTNF (Van Es, 2011) and also the MTN at the Pre-Intervention stage.

The findings at the pre-intervention stage indicated that across both the LTNF and the Noticing Matrix, the majority of responses were categorised at a surface, general level of Noticing. Within the LTNF (Van Es, 2011), responses at the lowest level of Noticing are simplistic and focused on the classroom environment generally (what is noticed), without a focus on pupils' experiences or the connectedness of teaching and learning (how they notice). There is limited interpretation and use of evidence to support conclusions, elaborations and wider connections are not made, leading to a lack of solutions and next steps identified from what has been noticed. Within the Matrix, there are two components that apply: 1) what is noticed; and 2) the depth of response. Within the first aspect, responses are offered in relation to the class as a whole, no key moments or interactions are highlighted or explored, a 'birds-eye' view is offered, providing a general sense of what is happening but without any connection to looking more closely at why this may be the case, and what that means. There is minimal evidence used to inform conclusions which are generally surface-level and unsupported by evidence. Across both frameworks there is little, or no interpretation and shaping of what is observed, only demonstrating the first of three Noticing components (Van Es & Sherin, 2021). Take the following response:

> I think, right from day one, if we can instil in them a love of reading then that's my aim. For some pupils it's alien to sit and pick up a book and even look at the pictures. For a lot of the children there is a minority that are used to this, and it is being done at home but there is a majority who just can't sit

and look at a book. Schools need to know what we can do to help. (Cara: Pre-Intervention)

Within the LTNF, this was placed within Level 1, Baseline Noticing, as it is based on the simplistic overview of pupils' abilities, with consideration focused on wider teaching and learning that is descriptive and lacks evidence and analysis. Cara had a clear aim, although she had not explored where this came from and what this looked like for her pupils or her teaching. There was no expansion on examples to unpick how she formed these conclusions. The same is evident within the Matrix. This is categorised as a (1, A) response: General-Surface Noticing. This is because what was noticed were general observations relating to the class or school as a whole. The perspective is the widest view without drilling down as to why this is her view or how it developed. It is also a surface-level response as it lacks sufficient interpretation of what is observed; there is no evident link to pedagogy and next steps, or how these impact on what she provides for her pupils. At that moment, Cara presented a perspective that was general and lacked evidence to support it.

Within responses there are many examples where both the framework and the Matrix are aligned with the surface-level Noticing taking place at the pre-intervention stage. For Cara, there were a high number of responses within Level 1 Noticing that were also Surface-General within the Matrix. Both frameworks demonstrate alignment in the absence of responses which demonstrate more than just the first component of Noticing: attending to what is taking place (Van Es & Sherin, 2021). Below is another example, which was at both Level 1 (Baseline Noticing) and General-Surface (1, A) on the quadrant:

Also, the type of text is something which I feel is probably not varied enough. We don't have comics, newspapers, etc. I think this might be

something pupils are interested in, but I can't showcase what I don't have. I

have tried using iPads to help this; we can do our best if the system is

working on ICT. (Cara: Pre-Intervention)

What was noticed here was a very generic, impressionistic observation of her

provision. However, Cara lacked the empowerment and agency to use this

information to shape her practice. She did not explore if and how she used this

information within her practice to address the challenges she identified. This showed

a lack of consideration given to pupils' experiences and no evidence given to support

her conclusions. Within the Matrix, Cara provided a blanket view that text choice is

poor; however, nothing specific was identified in relation to pupils, what impact she

observed, and how this influenced her teaching. Therefore, the depth of response is

also surface-level, with no impact on pedagogical decisions and problem solving,

and the conclusions are surface-level.

There were, however, some statements which were categorised differently upon both

frameworks during Cara's pre-intervention interview. Take the following response:

So, to me a good comprehender has that in-built love of reading. They have a

good level of reading ability and therefore can enjoy the text and follow its

meaning. I think some comes from home and some comes from their ability

as our more able pupils tend to have stronger comprehension skills. They

tend to be in a much better place to learn and so can run with what you teach

them and take it all in. They are able to start and go with you. A good

comprehender you can see through their pictures, through their writing,

through their daily conversation that a lot of input has been put into them

from home or from outside. Going to the other extreme, they are not talking

properly yet and they are saying things that don't make any sense; one word

that works at home for mum as she knows it but to us it doesn't make any sense at all, and they are struggling. 'Cos they are not getting that input they are struggling at school. (Cara: Pre-Intervention)

Within the LTNF (Van Es, 2011), this response was categorised within a Level 2, Mixed Noticing response. This is because, the categorisation for Level 2 responses combines teacher pedagogy alongside the emergence of pupil experiences within the subject area. This is evident when Cara began to exemplify her pupils' experiences and reflect on what makes a 'good comprehender.' She provided a general representation, attempting to interpret and use evidence to form conclusions, showing limited Noticing (Van Es, 2011). Cara discussed the difference between 'good' and 'poor' comprehending but lacks wider reflection on the conclusions she has formed. This resulted in a somewhat simplistic rationale and interpretation. Cara felt unable to influence the outcome of what she saw; there was a passivity where it seemed she did not consider her own role in the classroom as connected to pupils' experiences. It was challenging to categorise what and how Cara noticed as both aspects presented to different extents within this framework. *What* was noticed contained evidence from other categories, for example, looking specifically at pupils' experiences. However, this could be contrasted with a lack of depth in *how* they notice, as the example she offered was not unpicked or explored, and sufficient detail was not shared. Here, a noteworthy event was explored through the contrast in pupil ability, and it was evaluated and interpreted to some extent with evidence. However, the response failed to tap into the shaping and problematising of what this means for her practice, meaning it did not contain enough evidence to be placed in Level 3.

When applied on the Matrix, Cara's response was categorised as (4, B), Specific-Surface Noticing because while the statement showed a high level of what is noticed,

the depth showed only minimal exploration and problematising. For example, Cara pondered what makes someone a good or poor comprehender, reflecting on experiences with some degree of focus and specificity. However, the depth of the response demonstrated a lesser extent of reflection, for while Cara could draw on her experiences to exemplify this, there was a lack of analysis to understand why her conclusions were significant. She had not explored what they meant beyond a surface level, presented fixed beliefs that fail to recognise the role and influence of a teacher on pupils' learning experiences.

At the pre-investigation stage, there were no Level 4, Extended Noticing responses (the highest level) within the LTNF. This is paralleled within the Matrix; there were no Specific-Extensive responses that show the highest level of Noticing. What is evident from the example above, is that the Matrix demonstrates a response that has placed higher within the Matrix than can be shown on the LTNF. As most responses were either categorised at Level 1 and 2 it could be regarded that Cara, at this stage, did not present a high level of Noticing. While this is partly reflected within the Matrix, there is a greater spread across and within the quadrants at this stage. For example, the following statement:

> When I think about upper school, I did a lot of Nelson comprehension which was the scheme being used in the school. We also used the comprehension box which was full of independent activities which children work through on their own and at their own pace. It was always a very easy thing to plan for and the teachers always spoke highly of it. I thought it was good as it ensured everyone was engaged and finding out their own answers but I did notice that not all pupils enjoyed this; the traditionally more able pupils used to wiz through the levels but I did find that for the less able pupils it was something

they found boring and either required one-to-one teacher support or some

pupils would disengage. (Cara: Pre-Intervention)

This was placed within (3, C), the midpoint of both what is noticed and the depth of

the response. It was placed here as Cara talks in some detail about her current

practices and the impact of her provision for 'more' and 'less' able pupils'

experiences. What is missing is how Cara used this information; she attended to what

was taking place, but only provided a limited interpretation of this and was not able

to use what she noticed to shape her teaching and pupils' experiences. This shows

that all Noticing components of attending, interpreting and shaping are not evident at

this stage (Van Es & Sherin, 2021). Therefore, it sits in the middle ground between

quadrants. When transferred onto the LTNF, this is a Level 2, Mixed Noticing

response, the second lowest quadrant. This is because she provided sufficient detail

in terms of what is noticed, by attending to a method and practice of comprehension

teaching; however, her exploration of pupils' engagement was focused on two

general groups of pupils' experiences but did not drill down to these, nor did she

consider how this impacted her approach to whole-class teaching – hallmarks of

Level 3. This means that the response is capped at Level 2 because it does not satisfy

both aspects of what is noticed and how, whereas within the Matrix, both are plotted

at the midway point, which shows that Cara had some qualities within her reflection

that evidence some level of Noticing. For example, she noticed the impact of her

teaching is different for more and less able pupils, showing she can observe and

apply an emergent level of interpretation.

Post-Intervention

Figure 10 demonstrates Cara's responses plotted onto the LTNF and also the MTN:
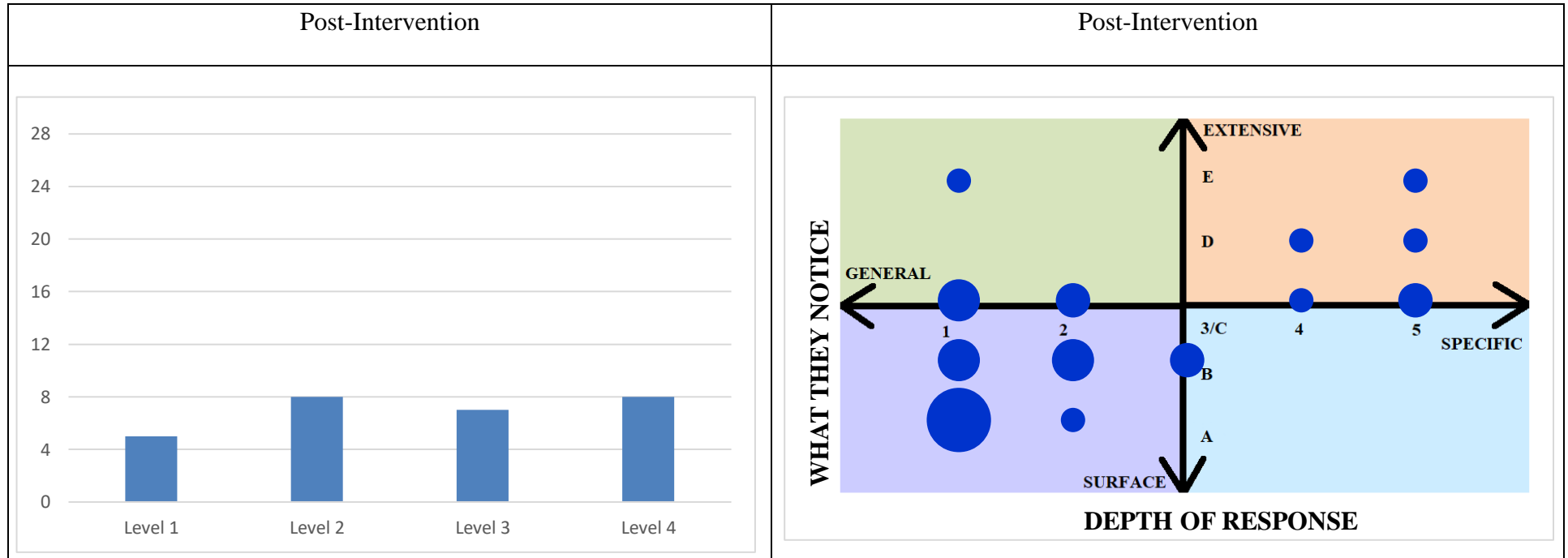
Figure 10 - Cara Post-Intervention data

The post-intervention data, when mapped onto the LTNF, demonstrated clear progress with responses categorised within Level 4, which was not present at the pre-intervention stage. Moreover, Level 4 responses are now the joint-highest number of responses recorded within her data capture. This demonstrates that the number of responses Cara shared were of a much higher level than at the pre-intervention stage. An example of an Extended Noticing response:

> I think it gives me ideas with the practices I have used. Before I used them, I was stuck, I didn't know how to engage specific children but now my head is always buzzing about how I can; so, yes, it has really helped. It's shifted my practice forward in terms of exploring what I am trying to teach with comprehension, what's important in comprehension and changed my curriculum to match that. It has helped me, but I think it has helped the children as well because they have more of a focus too, they now come to me to ask me to do something that maybe we have done the day before. It's always something that we can carry on. They are engaged and motivated about books in a way I have never seen before. We all talk openly, it's no longer the same pupils answering, everyone has a voice. The confidence of the less able pupils has increased so much, they are more engaged and actually working in mixed ability groups for the reciprocal strategies has been of huge benefit to them as the more able pupils are almost coaching them along too. We now don't have any literacy groups like we did before; that has made such a positive change. Everyone in my eyes is a reader and I know the children feel that. This investigation has been such a driver for change, and I am so glad I have engaged. Not just for me, but for the children. (Cara: Post-Intervention)

This shows Level 4 Noticing as Cara's response builds on pupil experiences, linking them to teaching and learning with an understanding of the interdependence and influence between them. It then helps Cara to make informed decisions for next steps and further learning. When mapped onto the Matrix, this response was considered Specific-Extensive (5, E). This is because it satisfies both the level of detail, criticality and reflection on what Cara noticed and that the depth of the response provided insight into how she used what she learned as a springboard to further thinking about new approaches and ways of working. She also demonstrates the depth in understanding the connection between herself and the learning experience.

It is worth noting that the Matrix also provides opportunity to represent responses that show high levels of Noticing but are not fully extended. Take the following example:

> I think we are more varied. It's not just about answering questions from scheme texts which they aren't interested in and don't connect to their own lives. Allowing pupils to really share what they think and using it has been so valuable to make literacy lessons more fun and engaging for all. I still am so amazed that one pupil who was so disengaged finally engaged in reading when I took the time to explore books which he liked and would be interested in. Oh, and I never thought pupils would have been able to all take on a role in their reciprocal groups at such an early stage – it's amazing what they can do. (Cara: Post-Intervention)

This response was categorised as a (4, D) which still sits within the quadrant of Specific-Extensive; however, what is noticed is only partially specific and the depth of the response is only partially extensive. This is because in terms of what is noticed, there is clear reflection on the experiences and engagement of an individual

linked to the practices implemented. However, there is a lack of depth as to how Cara has used what she has learned for the future including how it made her think about pupil ability and engagement in the widest sense. Therefore, while there are some strengths within this response, it would not sit at the highest aspects within each category on the Matrix. This can be contrasted with the LTNF, where this response was categorised at Level 4, Extended Noticing. This is the highest level of Noticing. Cara could explore and articulate what she has noticed, applying a degree of interpretation. However, this example illustrates a problem with the framework: that this response and the earlier response are quite clearly on two different levels. This response is high level but not to the extent that the previous shared example shows a full Level 4 response. This suggests that the framework is restricted as there is limited scope for differentiating within level descriptors. I propose that these statements are not of the same quality and that the problematisation, the 'so what', of what Cara has noticed is not evident to the same extent within previous example.

When exploring how the data is represented within the Matrix, progress and impact in learning are also evident when comparing the pre- and post-intervention data for Cara. There is also a greater spread across the quadrants. There are responses (see above) where the highest level of Noticing takes place, reaching extensive responses where Noticing has shifted in focus and depth. Interestingly, within the post-intervention data, high impact is also shown by the reduction in the overall number of Specific-Surface responses than at the pre-intervention stage. Therefore, where responses are specific, they are all now within the scale of Extensive, indicating a high level of Noticing is taking place where Cara can drill down to focus on an extensive depth of response.

Moreover, with the exception of one instance, there were no General-Extensive responses and so for the most part, Cara provided high-level reasons on what is noticed and in the depth of her responses. There is only one General-Extensive response outlined below:

> I always felt there wasn't really time for those kinds of lessons, for good chats about books, for pupils to see themselves as readers, but to me being part of this has helped me prioritise what we want our early years literacy to look like and have the permission to do so. All of the practices which I have tried have become part of our routine. We have a reader response session whole class every week which the children love and instead of our floor book being for 'thinking reader', it's a journal of the pupils' artwork and even a few words of how they respond to the texts we read. The reciprocal approach is also something which I feel the pupils are really benefitting from, they all seem to actually understand, even at such an early level, that these skills help them build a picture of what that story means to them. I've been blown away with what they can do. It's been incredibly positive in this respect. I think the biggest shift has been from me. In shifting that perspective that comprehension is something which you interpret, it's not fixed and it's not about whether they understand it the way I do. It changed from being a 'get the right answer' exercise to actually talking to children about what that text meant to them; that is something I have never thought about, and I don't think many other teachers have either; yet it's changed my whole approach. The connections they have made has been amazing and this has had a really positive impact on their awareness of the world around it – the Cultural

Capital, building that knowledge. They have come on so much. (Cara: Post-

Intervention)

This response was categorised as General-Extensive for several reasons. It is general in nature as it fails to focus with specificity on pupils' experiences and how this relates to the wider lesson and classroom life more generally. It is, however, extensive in that the depth of response provides clear reflection; Cara has applied a level of criticality to her perspective on reading comprehension and how it has shifted, connecting her lesson purpose to pupils' experiences, and her own learning. Therefore, being able to map both what is noticed, and the depth of the response ensures that this response accurately captures how reflective Cara has been, whilst acknowledging the lack of specificity of pupils' experiences individually. This can be contrasted with the LTNF where this response was categorised as only Level 2, Mixed Noticing. Within this response, Cara did not meet the criteria for Level 3, Focused Noticing, as this category requires a shift from general classroom view to being solely about pupils' thinking and learning. As this was not provided within the response, the response was logged at Level 2. This arguably falls short of acknowledging the depth of learning that has taken place, how Cara's value, perspective and methods for teaching reading comprehension have shifted and how she connects and puts everything together – the experiential qualities at the heart of the Noticing (Sheiner, 2016), just without the specificity of individual pupils' experiences.

Also, while there are many responses that still sit within the General-Surface quadrant, the distribution is far wider than before, with far fewer responses at the most simplistic categories of Noticing. These shifts within the distribution of

responses within the Surface-General quadrant itself are not able to be evidenced within the LTNF as the Levels span broad categories. Take the following example:

> Also, I rely less on scheme books and let children read real books as often as I can. That's what they want to read, they are so much more engaged, and they take so much more from them. The amount of reading they do in a week has increased as they want to read the books we share over and over again. They are motivated to read. The scheme books just aren't the same quality so now I try to provide both, the scheme so they follow school policy, but a heavy emphasis on picture books for our comprehension classwork. (Cara: Post-Intervention)

This response was logged within (1, C) which is General-Surface. This acknowledges that what is noticed still sits within the general sense of the classroom as a whole, the birds-eye view of the use of texts in the classroom, without thinking specifically about groups or individuals. What is at a higher level, however, is the depth; there is clarity of thinking within the mid-range response. There was an emergence of criticality in Cara's thinking about the impact of using real texts, providing a link between teaching, learning and engagement for pupils but there is insufficient detail in the interpretation as to why and what the changes looked like. This example demonstrates that the more subtle shifts and improvements in Cara's Noticing are simply not afforded within the LTNF due to only having four large categories, which require two elements to be evident to the same extent. The Matrix provides greater insight into developments that have been made that are not significant but are nonetheless important in illustrating the impact of the learning experience on Cara as a teacher and learner herself.

5.2 Donna's Experience

Pre-Intervention

Donna's reflections of her experience are shared below. Figure 11 illustrates the responses categorised onto the LTNF (Van Es, 2011) and also the MTN at the Pre-Intervention stage.
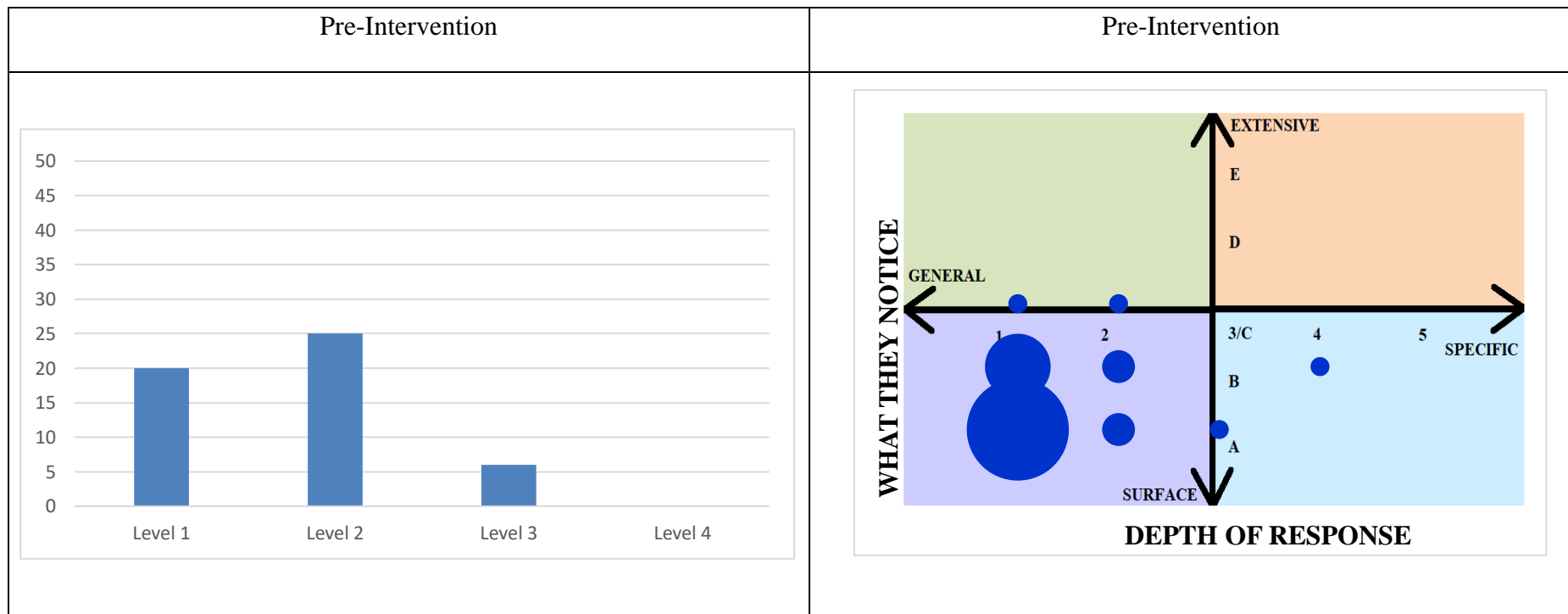
Figure 11 - Donna Pre-Intervention data

For Donna, there were a high number of responses categorised within the most limited aspects of Noticing on both frameworks. Take the following example:

> I do feel that comprehension is usually an activity which the children traditionally find quite boring, there isn't a lot of enthusiasm for it. Some pupils get very little done of their comprehension worksheets. The scheme stories can be a bit dry too. (Donna: Pre-Intervention)

Within the LTNF, this response was categorised at Level 1, Baseline Noticing. This is because the response did not provide any detail and criticality than events in the widest sense. The response skimmed the surface of the whole-class environment and learning. There was a lack of focus on individuals' experiences on what is noticed and how the bigger picture, and the specific experiences of individuals, link. This alone is significant; however, when coupled with a limited response in terms of how teachers notice, the response could only be categorised at the most basic level as it offers a general impression of what was taking place, with no noteworthy events, no evaluative or interpretive reflections either. There was also a lack of evidence to support conclusions.

Within the Matrix, this response was logged at (1, A), General-Surface Noticing. This is also the most basic level of Noticing. The response sits within this quadrant as, again, it is general in terms of what is noticed with only general observations of the classroom as a whole and not unpicking what happens and why. Also, it sits within a surface-level for the depth of the response as although Donna attends to what is observed, there is a lack of problematising, of experimenting and trying to address this – core components of Noticing (Van Es & Sherin, 2021). What is shared is only an observation, the first component. There is minimal evidence used to form conclusions and a lack of connection between learning and teaching. This shows that

there can be alignment between both frameworks and that in some cases, they can represent a participant's response in the same way. The challenge seems to be where there are responses which are not clearly extremely basic or of an extremely high level. This seems to be the only time there are clear matches between the two Frameworks in how the data is categorised.

For Donna, within the LTNF, Level 2 responses are the highest number of responses within the pre-intervention data. Take the following example:

> In the past, these meetings were dedicated time for Leads across an authority or learning community to meet up and share practice. We were given the opportunities to chat to one another and they were the most valuable times in actually hearing from them about resources for literacy because that always seemed to be the real issue, not the actual mechanics of reading and how we teach that seemed to be covered quite well, but the actual comprehension was something more tricky to teach so that helped an awful lot. Like the comprehension box, a resource we could all buy and use – that was fab. However, this was when I first started teaching in the authority and, due to funds, there has not been the cover to allow these meetings to take place, so they stopped happening altogether in the past few years. And up until now, the most recent sessions had been about creating policies, pathways, etc., which really aren't that helpful in terms of leading staff in literacy while I appreciate, they are helpful for schools and the authority. (Donna: Pre-Intervention)

This was placed at Level 2 because while there was a lack of focus on pupils' experiences, the response focused on teaching within the subject area, a step up from merely general classroom practice. Within her response, Donna highlighted some

key points to unpick within her overview. She provided limited evaluative interpretations and introduced some specific events to evidence and support her viewpoint. This was quite challenging to categorise as there seemed to be a very limited response on the part of the connection between teacher and pupils, with the focus solely on teaching, firmly Level 1 in terms of what teachers notice. This is even more interesting as within the Matrix this response is categorised as (1, B), which sits within the General-Surface quadrant. This is because being able to chart two aspects allows for better representation of what is taking place.

What was noticed, similarly to the LTNF, showed a very limited exploration of pupils' experiences. The response covers many aspects without unpicking any in sufficient detail or depth. Moreover, within the depth of response, Donna's comments sit within B (Partial-Surface) as there is more than a simplistic statement that the development of her knowledge, skills and practice has been inconsistent and unsupported; rather, she showed a limited level of reflection as to why this has been the case, with some examples although these were not fully explored through her interpretation. The 'so what' factor of these comments is yet to be explored by Donna. This example helps to illustrate the LTNF's limited capacity to show the nuances where responses do not sit neatly within one category for both aspects and where a response may lie between two Levels. This is the key challenge, the level of interpretation that a researcher needs to apply when categorising using this framework. The Matrix, however, helps to remove some of this challenge by separating two aspects and being able to plot these separately to gain an overall categorisation of the response.

As mentioned previously, there appears to be alignment when responses are present or absent at the extreme ends of both frameworks. For example, within the LTNF,

there are no Level 4, Extended Noticing, responses. This means that at the pre-intervention stage, Donna did not demonstrate any responses with a high level of what is noticed and how it is noticed. Results mapped onto the Matrix show the same. There are no high-level responses recorded within the Specific-Extensive quadrant. There are two examples of responses that are general in what is noticed but are on the mid-point between surface and extensive in terms of the depth of response. Take the following statement:

> I thought I was doing an effective job, and I actually think there is a lot more to it. It's not as straightforward as I thought it was. There are so many ways we can tackle that for staff, pupils, parents all with different needs and expectations. In some ways, I feel very overwhelmed by it all. And I think the more knowledge you develop the more and more responsibility you get – and that's a big job. Like for me, to be Literacy Leader. The thing is, I never wanted to be it in the first place. And you think, 'Gosh, I'm hearing new issues and I know nothing of how to help/advise.' I want to take pride in this role, but I don't feel I know enough, yet I don't know anyone who can help me. (Donna: Pre-Intervention)

This response was recorded as (1, C) within the Matrix. This is because Donna failed to provide sufficient detail of what was noticed in relation to pupils, their learning, and experiences and how this links to the points that she makes in her reflections. However, this is recorded as a midway depth of response because of the aspect of critical reflection present. At this point, Donna bravely shared her insecurity in her role. She tried to take a balanced view of what was taking place and recognised that her own confidence in the area was holding her back. This, while not specific to learners, is powerful as it showed she is connected and taking on board information,

reflecting upon it, and concluded that this was complex. She took that forward as a learning point: a positive next step. This response, when categorised onto the Four Levels, results in Level 1, Baseline Noticing. While there are some aspects in evidence of what is noticed, where Donna evaluated her leadership, acknowledged the challenges she faces in an honest and vulnerable way (*how* she notices), there was an omission of *what* she noticed, where Donna had not connected this with pupils' experiences and her practice. Level 2 would require that Donna highlight noteworthy events, provide evaluative comments, with some interpretation and some level of evidence used to inform conclusions; these were not covered within Donna's response. There was no focus on pedagogy which links to pupils' experiences and therefore this sits within Level 1. This is, again, a difficult response to categorise as moving to Level 2 does not account for the response in terms of what is noticed, although it does show some elements of how Donna noticed, further demonstrating the challenges of the framework.

Within the LTNF, there are a small number of Level 3, Focused Noticing responses recorded. An example is:

> Yeah, just as before, for some pupils it is so clear that it comes naturally to them and they can pick up the inference behind and the meaning of what is behind. It's all about getting people at home to talk about everything too, whether it's about what they are having for their dinner or what they are watching on television or what they are reading at night-time, you know, all of that. And if children don't have that then they are not bringing anything to their reading and therefore find it difficult to infer what other children are just picking up daily without the need for input. It is very tricky for someone who

doesn't have that background; how to do we provide that? (Donna: Pre-Intervention)

This response was categorised at Level 3, Focused Noticing, where learners are at the forefront of Donna's reflections. She thought deeply about what goes on in the classroom and highlighted events with evidence of what is going on underneath. She demonstrated empathy and reasoned that pupils' early experiences and home environment influence their readiness to learn. She began to consider that this was not something she catered for and supported at that point. To make this even higher, Level 4, Donna could have considered how she uses this information, what she has tried; the problematising aspect is missing, the shaping (Van Es & Sherin, 2021). Within the Matrix, this response was categorised as (3, A). This is the midpoint between general and specific for what is noticed because Donna focused on pupils' experiences and provided some degree of interpretation. She contrasted these reflections, evaluating them in her interpretation. However, she only exhibited a surface-level response in relation to the depth of her Noticing. This is because, similar to the LTNF placement, Donna did not use this information to alter her practice. This fits with the categorisation where these aspects of reflection do not show links to the impact on future pedagogical decisions.

The findings within this example show that a response that has been categorised as Level 3 only meets a 'Level 3' equivalent on one of the axes within the Matrix. The other aspect is not represented to the same extent because there was a lack of depth within the response provided; for example, Donna did not show how she used this information; she attended to what she observed and interpreted the challenges this posed for practice, two components of Teacher Noticing (Van Es & Sherin, 2021). However, she did not use this information; there was no shaping of what she noticed.

Furthermore, there are three Level 3 Noticing responses, one being the example included above. The other two examples can be paralleled within the other examples on the Matrix which sit along the midpoint of both scales. This shows that there is clearly an aspect within each of these responses which indicates a higher degree of Noticing, the Matrix contrasts this outcome with both aspects of the statement not being in alignment and that either what is noticed or the depth to which it is explored is not fully equal. Again, this outcome cannot be illustrated within the Levels provided by the LTNF (Van Es, 2011).

Within the Matrix, there is one outlier, one response which does not fit within the distribution of responses, coded as Specific-Surface (4, B). This statement is:

> That's tricky because I had a reader two years ago who was clearly supported really well at home; Mum was a speech and language therapist. At home she clearly had that background, and she was a super reader, but she struggled to understand what she was reading so when she came through, she had flown through loads of books but couldn't understand. So, a lot of the questions she was being asked, she just didn't have it, so they went back and actually read some books again that she already done [*sic*], which did not go down well at home. So, what makes her different from someone who is a maybe a struggling reader? But actually, if you listen, if I read to that individual, they could pick up all the meaning. I also have one child in the class who was a particularly poor reader but actually was a super comprehender and he sat and listened to other groups of children and could answer the questions much better than the children who were better readers. What it was that she came from a background that loved reading and this little boy didn't and yet had the understanding she doesn't. (Donna: Pre-Intervention)

Within this response, Donna demonstrated what Noticing is to a high degree (Partially Specific); she did this by drilling down to explore and contrast two pupils' experiences and how their experiences are very different, specifically noting that there was something deeper going on behind what makes a good and poor comprehender. Conversely, the response falls at the Partially-Surface level because Donna did not provide a solid interpretation of what she observed using evidence, nor did she then use this information to inform her teaching – both core components of Teacher Noticing (Van Es & Sherin, 2021). This example can be contrasted to the LTNF, where Donna's response falls at Level 2, Mixed Noticing. On the LTNF, Donna showed a high level of reflection in unpacking learners' experiences and contrasting these; she critically reflected that something more was going on. However, she did not use this information, in a similar vein as outlined above, so the response could not be categorised any higher. The placement within this example allowed me to reflect on the 'best fit' approach within the LTNF. This 'best fit' is challenging to apply as often there is insufficient evidence to confirm a statement's categorisation, so the weight must be balanced before a decision is made, and in some cases, the margins between categorising between two Levels are small.

Post-Intervention

Figure 12 demonstrates Donna's responses plotted onto the LTNF and also the MTN:
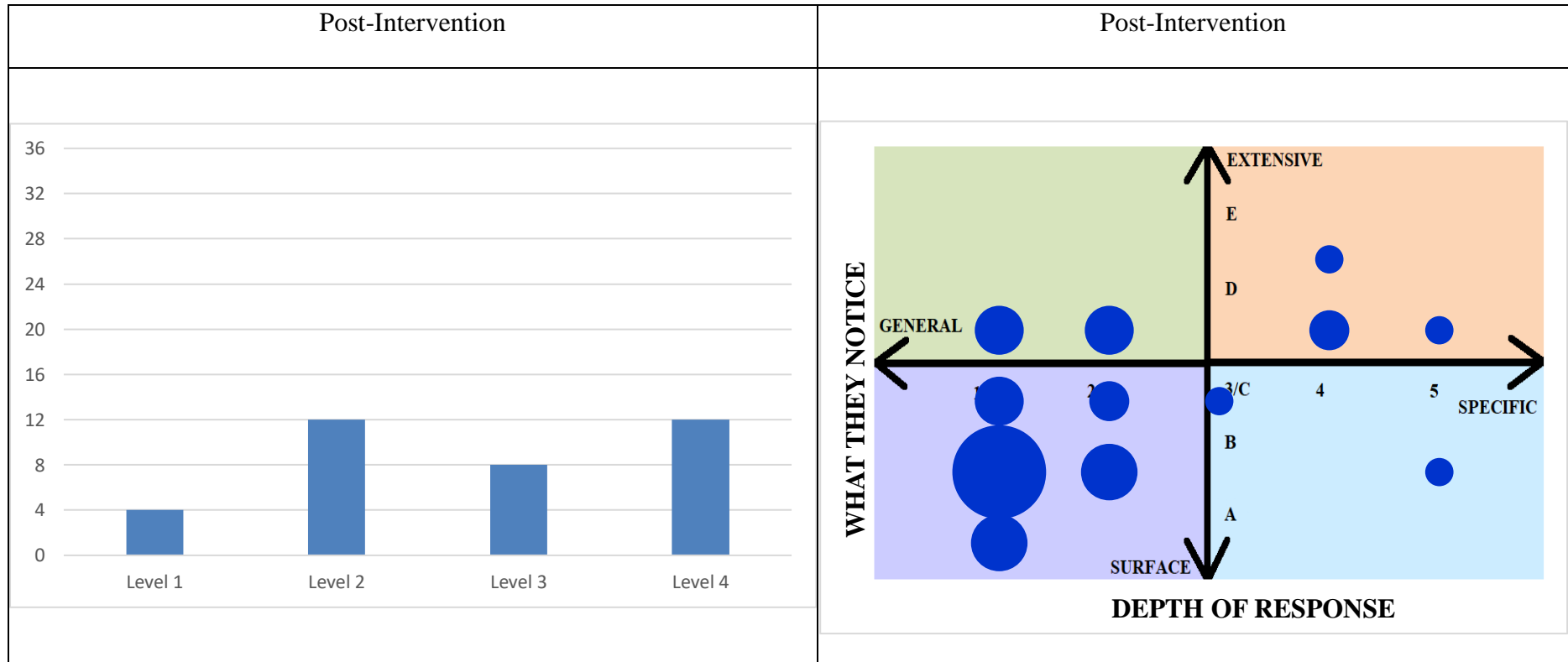
Figure 12 - Donna Post-Intervention data

When looking at the impact of the intervention on Donna's learning, it is clear across both frameworks, that there was a positive impact evidenced from the pre to post data sets. Across both frameworks there were a greater number of responses showing higher levels of Noticing than found within the pre-intervention data. Indeed, some powerful and impactful examples of the learning took place through the intervention:

> I think I've become much more flexible and creative. I've removed my ability groupings, I'm more fluid with how I look at where my pupils are with their reading. I do think my practice is more fair and equitable for all pupils as they all have access to texts and to engage in drama, etc., whereas before I probably wouldn't have done that as they were in their ability groups. (Donna: Post-Intervention)

This statement was categorised as a (3, C) within the Matrix which shows that Donna has developed both what she noticed and the depth of the response beyond surface and general levels to the midpoint within both aspects. While this has not yet reached the highest levels of specificity and extensiveness, it demonstrated a clear focus on her pupils and how they benefit from the intervention as she has developed her own thinking in relation to the equity of her provision. What would have enabled Donna to reach the highest Noticing response within *what* she notices, would be to pinpoint and isolate specific and noteworthy aspects, exploring and discussing how these were significant in relation to her pupils' wider experiences. Within the depth of her response, at the highest level, Donna would provide more detail on her conclusions and how they are a springboard for future thinking. In her responses, however, Donna did not show how she used what she learned to consider the 'big questions' within teaching and learning generally. She was able to problematise her approach and make changes as well as evaluating the impact of the changes.

Therefore, while she has not fully explored this concept within her statement, there were some big shifts in how she reflected on pupils' experiences. This response was also categorised within Level 2, Mixed Noticing. The response revealed a great deal about pupils' experiences, which is positive, although it lacked the detail of how this progress took place; in other words, she did not identify what made the difference. In this respect I would argue that while the LTNF is not wrong, I propose that Level 2 is where this sits within that framework criteria; however, the Matrix represents this shift in Donna's Noticing more accurately. She may not have shifted to the highest levels of Noticing, but she exhibited clear reflection on pupils' experiences in a new, empowered way – core aims for Noticing teachers (Ellis & Simpson, 2020).

While the above statement may not have ranked highly within the frameworks, there are some examples of high-level Noticing statements where Donna demonstrated her ability to notice with specificity and depth and where this learning is effectively acknowledged within both frameworks, albeit with subtilties in placements. Consider the following:

> Reading has become so important to all my pupils, not just the ones who were disengaged; others were 'good' readers but didn't necessarily enjoy or see the value of it. It feels valued within our class, our library area has now been overhauled and children are actively sharing and discussing stories. The idea of reader response has allowed struggling readers the chance to find their voice and their identity as a reader. To hear pupils talking about what a story means to them is so much more valuable than answering a question in a sentence. The shift has focused and has really increased pupil enjoyment of reading. (Donna: Post-Intervention)

This response was categorised as Level 4, Extended Noticing, within the LTNF. This was recognised as the highest of the Four Levels as Donna reflected in a way that connected pupils' experiences, individually and collectively, to her own practice – the pedagogical decisions she made and how these decisions, in turn, helped her to shape the purpose of her lessons. Therefore, there is an effective mix of what she noticed and how she used the things noticed for further instruction. This was a positive realisation for Donna as it changed not just her pupils' experiences but her influence and role in using these reflections to consider the experience, environment and practices she uses, key qualities of Noticing teachers (Van Es et al., 2017).

When applied onto the Matrix, this passage was categorised as (5, D), within the Specific-Extensive quadrant. It showed a high level of Noticing, the highest in terms of what is noticed but only partially extensive within the depth of the response because there was a high level of specificity evident within what is noticed. Donna saw both a drilled down view of 'good' and 'struggling' readers experiences, balanced with a whole-class view and what she has learned from these. Depth was categorised as partially extensive because she explained what she has noticed, showing how her awareness of pupils' experiences has shifted her approach, but there was no greater connection to what this meant for her teaching practice, how she used this information, or how she sees the information shaping future instruction. In this way, the response is still within the Specific-Extensive quadrant, as it omitted the application of shaping (Van Es & Sherin, 2021) required to be categorised as extensive, or in-depth. A better demonstration of the subtleties of these responses is one of the main considerations that the Matrix affords. Within the Levels of the LTNF, there are a number of Level 4 Extended Noticing responses, whereas within the Matrix, there are no extensive-specific or extensive-general responses. There are

a number of responses within these quadrants at the partial or midpoint categories, therefore showing that all high-level responses are not necessarily equal, a dimension unattained within the LTNF.

Another exemplification of this inequality is the following statement, categorised as Level 4, Extensive Noticing, on the LTNF:

> I also feel that I am more open to how I teach as it's driven by my pupils and what they know and bring. I feel more skilled at having conversations with pupils about books, as a reader, as a person and use that to help promote recommendations as well as help provide choices for class novels and shared texts, and really hooking pupils in to reading. I've relied heavily on the Cultural Capital; it is so important that we value and use it. I found we used it for some pupils, but it's about looking at what everyone knows and likes as a basis for literacy and the stepping-stone to reading. I felt some of my pupils didn't see themselves as readers as they didn't have the experience of being a reader from home and we didn't do enough in school to foster that; we assumed everyone had these experiences and they don't. I'm deff [*sic*] more aware. (Donna: Post Intervention)

This response was categorised as Level 4 because it showed a level of criticality, reflection on practice, and shaping future pedagogical decisions based on what had been learned, the third component of Noticing (Van Es & Sherin, 2021). However, there was limited specific detail about individuals, groups or other categories relating to what was noticed, making this response more difficult to categorise. Nevertheless, there was depth and criticality in her reflection. On the Matrix, this statement was plotted within (4, D), the Specific-Extensive quadrant, the highest dimension for Noticing, although not the highest aspects within the quadrant. A higher evaluation

would have required both further specificity of individual pupil's experiences and relating these to pupil experiences generally, showing the ability to notice how individuals' experiences build to the whole-class view (what she notices), and how Donna will use what she has learned to impact on her decision making and approaches more widely, beyond the scope of the reading comprehension lessons (the depth of Noticing). Donna noticed with reflection, honesty, and consideration of self in relation to learners, illustrating that she saw herself as a learner too (Aukerma & Aiello, 2023). Also, in terms of what was noticed, there was a drilling down into this one strategy and its impact which was strong. The response was not plotted as fully specific or extensive as the reflection did not consider pedagogy more widely or explore how to implement what had been learned in further teaching, required when shaping is taking place (Van Es & Sherin, 2021).

When comparing the pre- and post-intervention data within both frameworks there are some differences evident. Within the LTNF there is a clear reduction in the number of responses at Level 1, Baseline Noticing, which shows that there are fewer responses shared at the lowest level than previously. There is also a reduction within the number of responses within the General-Surface quadrant of the Matrix. Interestingly, this is not seen to the same extent as on the Matrix; however, there is a reduction in the number of responses which are fully general and fully surface level (1, A). The following example helps to illustrate this further:

> I've discussed it with colleagues and stage partners, and they are all eager to participate. They have commented to me that at lunchtime etc. they hear pupils talking about our reader response book and they have heard our pupil council rep asking for more books for all the classes at the latest meetings.
> (Donna: Post-Intervention)

This response within the Matrix is still within the General-Surface quadrant; however, it is a (2, B) because there are partially surface and partially general elements, not the lowest levels of both. This is because Donna focused on an example of the impact which she and her colleagues had seen and a degree of reflection was used, although a lack of discussion as to what this means, how these reflections are important, and what it told her about the pupils, about reading comprehension, and wider practice. This evaluation can be contrasted with the LTNF where this response was categorised as Level 2, Mixed Noticing, as Donna discussed pupils, their engagement, and the impact she has observed from their actions. The response includes a noteworthy event and a brief reflection on this; however, she did not discuss what this means and how this information was used. In spite of this omission, the response superseded Level 1 generic level impressions and therefore was placed at Level 2. This response is a good illustration of how there can be such a large proportion of Level 2 responses within a data set, because the criteria for Level 1 is quite simplistic so the responses need to move up but do not always merit this in both aspects. The Matrix, however, demonstrates the more subtle shifts within her Noticing, illustrating that learning has taken place in a way that the LTNF cannot as the criteria between the levels are much larger; the Matrix offers a more accurate representation.

Improvements in Donna's Noticing abilities were still evident within the LTNF. Take the following example:

> The 3 Sharings in particular, I find that I am doing that every week with the children. Introducing new questions to them every two or three weeks so that we are getting lots of practice and depth on that question. We started with the basic structure but now I'm going deeper. Sharing why one particular answer

might be better than another one, by asking 'tell me more', so, definitely, the 3 Sharings. The second set of lessons focusing on an individual and reader identity, we have done some of that, and what was really helpful with that is it gave me an opportunity to get to know the children a bit better and their reading habits a bit better. That has been useful and had an impact on the type of books we have read and encouraging children to share favourite books and create a buzz around certain texts which everyone wants to read. I feel I know more about how to engage individuals and really look at their reading habits and think about what we can read as a class and how I can help them develop a network of readers. (Donna: Post-Intervention)

This was categorised as Level 3, Focused Noticing because Donna focused specifically on what the pupils have experienced. There was also a balance provided between the connectivity of individual pupils and the collective pupil experience within the classroom. Also, in terms of how Donna noticed within this response, she highlighted some noteworthy points and used these as evidence to show the impact, demonstrating the first two Noticing components: attending and interpreting (Van Es & Sherin, 2021). This can be contrasted within the Matrix where this response is categorised as (2, D), which is within the General-Extensive quadrant. This is because the depth of her response was high and partially extensive. She analysed the practices she implemented and the impact they had. Reflection on teaching and learning within the subject area is clear, although there is no evidence of how this shaped her wider reflections on practice more generally. There was mention of pupils generally and, while individuals and pupils are mentioned in relation to the practice, there was no exploration of what is noticed about them; she did not consider what pupils experienced within the practices, the impact of these observations and how

she used this information, thereby reducing the categorisation of what was noticed to sit within the general aspect.

The above example illustrates that within the Matrix there is a clear shift towards Extensive Noticing and to a greater extent within the general dimension of what is noticed. This is a subtilty that is not afforded within the LTNF as there is only a stepped progression across most Levels. When exploring the Matrix representation, there is an upward shift from General-Surface to General-Extensive responses, showing that Donna became far more extensive in the depth of responses she provides for her pupils but that there is still a high emphasis for her of the general classroom-wide view. This, as mentioned above, cannot be seen on the LTNF, which only shows that there have been improvements in Level 3 and 4, suggesting a straightforward improvement, which is arguably a more simplistic view that does not allow for any differences in terms of what and how Donna noticed.

5.3 Allison's Experience

Pre-Intervention

Allison's reflections of her experience are demonstrated below. Figure 13 demonstrates the responses categorised onto the Noticing Levels (Van Es, 2011) and the Matrix at the Pre-Intervention stage.
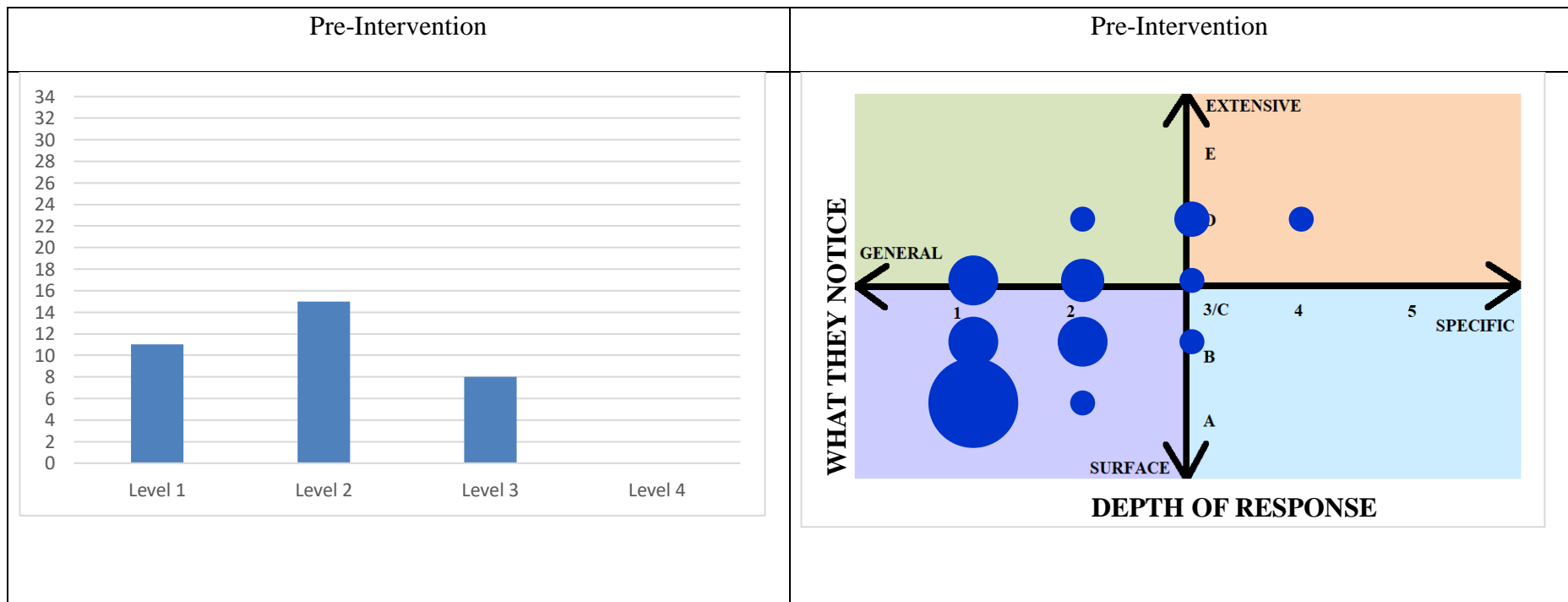
Figure 13 - Allison Pre-Intervention data

Allison's pre-intervention data was the most varied when represented upon both frameworks. Within the LTNF, Allison had Level 2 (Mixed Noticing) responses as the highest proportion of all statements recorded; this is greater than both Cara and Donna who had the highest number of responses within Level 1 (Baseline Noticing) of the pre-intervention data. Take the following response:

> I think that it's been different ever year. There has never been a structured way of implementing it [reading comprehension]. About two years ago we tried to do a whole-school focus on book detective strategies, which at first seemed to go really well but pupils weren't embedding the skills, but it became a back seat as the kids became used to it and needed something new and exciting. So, since then, there hasn't been any kind of structured approach. We all just kind of use our own approaches but when you think about it, it's not helpful for the pupils to not have a consistent focus and approach across stages and the school. (Allison: Pre-Intervention)

This was categorised at Level 2, Mixed Noticing, because here Allison thought about her practices, describing the rationale behind them and considering the impact on pupils. She connected these aspects and interpretated what she noticed (Van Es & Sherin, 2021). She was not able to use this further other than acknowledging this had a negative impact on her pupils. The problematisation is what is missing to access a higher Level. However, there were still positive aspects; she selected a key event and provided some detail and evaluation of it which fits within how she notices, as well as beginning to focus on pedagogy and pupil experiences, linking with what is noticed at this level. This response also maps onto the Matrix higher than fully Surface-level and fully General, recognising that both frameworks value this response, albeit within the Matrix it sits within (2, C), which sits at the further end of

the General-Surface level in relation to the depth of the response. This shows that across both there is alignment in that Allison could observe, attend to, and interpret to some extent before the intervention.

Allison had the highest number of Level 3 responses at this stage. She already demonstrated a high degree of Noticing ability. What follows demonstrates her pre-intervention abilities:

> I know I keep going back to the Cultural Capital because I feel they [the components of reading comprehension] are already in place, not exactly maybe as they should be, but they are being covered in some way and I feel I could extend that. Whereas I feel the Cultural Capital…well, they [they children] are all from completely different backgrounds and even down to vocabulary; to some it's new, to others it's part and parcel of home life. So, I think there is a huge benefit to be had. I can think of at least six in the class who would benefit more from having time set to network and promote reading engagement in this way. (Allison: Pre-Intervention)

This response was categorised at Level 3, Focused Noticing, because Allison highlighted a practice that she felt was significant and she related this practice to pupils' experiences. She showed a connectivity between practice and pupil experience as well as how this could bridge the gap that some pupils experience from home literacy experiences. She also used some evidence to support this view through what she knows about pupils' home experiences and how this practice could support this. There was, however, limited elaboration on how she could use this reflection to explore in more detail what specifically about the six pupils she has identified was important, thereby making the response more extensive by showing that she has shaped her thoughts more fully. Taking the same response and applying this within

the Matrix, it has been categorised at (3, C), which is the midpoint on what is noticed and the depth of response. It shows the midpoint between General and Specific because what is noticed sits within a balance of individual and collective. She pinpointed pupils who lack access to the same prior experiences, and interpreted how this will impact on their ability to access and engage with learning, albeit to a limited extent. There was a clear link between teaching and learning within reading comprehension, although it could have been further extended by exploring the wider considerations of how Cultural Capital in this context has supported Allison to consider her practices more widely.

Within the Matrix, Allison's pre-intervention data showed the majority of responses sat within the General-Surface quadrant. There were far more responses which move away from fully Surface and General responses towards partial and midpoints within what is noticed and the depth of the response. Take the following example:

> I think it goes back to teacher confidence. I personally enjoy and am interested in literacy and so my strengths are in this area. Whereas I know colleagues who love teaching maths aren't as confident with literacy teaching. I think as a primary teacher it's hard to have the same level of expertise across all subject areas and so when we put anything new in place it always lands differently. (Allison: Pre-Intervention)

This response sits within the General-Surface quadrant although it is not deemed fully Surface and fully General in terms of what is noticed and the depth of her response, rather, it is placed at (1, C). In relation to what Allison noticed, her response is fully General because there is no focus, mention or reflection relating to pupils, which fails to relate teaching to pupils' experiences. In relation to the depth at which Allison noticed, she demonstrated a midpoint response as she evaluated her

own experience in relation to how teachers approach reading comprehension and the challenges they face, showing that Allison reflected on some of the wider factors influencing her practice, including teacher knowledge and confidence. This response was placed at Level 2, Mixed Noticing, on the LTNF because it satisfies the criteria for how teachers notice, where Allison formed a general impression of why teachers find teaching reading comprehension challenging, with some level of interpretation, the first two components of Noticing (Van Es & Sherin, 2021). She provided some evidence used to inform her view; however, it did not quite meet the criteria for what is noticed as there was no connection to pupils within this response, which is also important for this level. This omission could account for why Level 2 responses were the most prominent for Allison at the pre-intervention stage.

There are a couple of instances where Allison provided responses that demonstrate high-level Noticing within the Extensive-Specific quadrant. From the outset, Allison demonstrated the core Noticing components of attending, interpreting, and shaping (Van Es & Sherin, 2021). Take the following response:

> So, we do a broad range of things and I try to keep it varied and ensure that if a child is doing an independent session one day, they then do co-operative learning the next day and a guided session the day after. So, it ranges from a guided session with me, where they take turns to read aloud and they use the Bloom's questions, a gumball machine to prompt questions – so that's the most in-depth part of comprehension teaching. If they are not with me, they might do summarising, I try to add in some drama. I got a costume box to allow them to try and act it out, we have tried to do some hot seating. These are harder as some of the reading books don't have a lot in them and I'm not with that group to support so there are some issues with that. We have the

comprehension reading books which is like a close reading passage. We also

have Bloom's questions which are in their jotter and they can individually

select a task to respond to. (Allison: Pre-Intervention)

Indeed, this statement was placed within the Specific-Extensive quadrant with both

partially Specific and partially Extensive qualities (3, D). This is because Allison

discussed her approaches in detail. Also, crucially, she shared the rationale behind

the range of practices, namely promoting engagement through a variety of activities

and groupings, yielding a partially Extensive response. It could have been further

enhanced by discussions of which pupils benefitted from each and why, and how she

uses this information within the subject area and beyond, the shaping component of

Teacher Noticing (Van Es & Sherin, 2021). Furthermore, Allison has a few responses

that sit across the Extensive quadrants between partially Specific to partially

General. This shows that she demonstrated Noticing within the partially highest

aspects within Teacher Noticing from the outset. However, this quality was not fully

reflected within the LTNF as no Level 4, Extended Noticing, responses were

recorded.

The statement above was categorised as Level 2, Mixed Noticing within the LTNF

because within this framework the response was limited by the lack of focus on

pupils' experiences; therefore, it could not be categorised in Level 3 or 4. When

looking at how Allison noticed, there are some aspects that would fit this category;

for example, Allison highlighted key aspects of her practice and provided some

justification for using them. However, as the pupil aspect is missing, there can be no

wider connection to teaching and learning generally, even though there is clear

reflection to inform the pedagogical decisions that she has made by providing the

variety she felt her pupils needed. This is a key descriptor of Level 4, Extended

Noticing, within how teachers notice as well as describing the shaping component of Noticing (Van Es & Sherin, 2021). This is where the LTNF illustrates the limitation of the broad levels which encompass two aspects, where the Matrix allows the charting of both separately to account for the informed pedagogical decision-making which Allison is clearly applying in her activities whilst acknowledging that more attention to how this relates to pupils, their learning and experience should be given before pulling this information together to reach the fullest Noticing response. Therefore, Allison's pre-intervention data within the LTNF may not demonstrate the fullest extent to which Noticing abilities were already present to a higher extent.

Interestingly, within Allison's pre-intervention data there were no responses recorded within the Specific-Surface quadrant. When sharing a surface-level response, Allison generally only attended to the classroom environment as a whole. She is unique in this as both Cara and Donna had at least one response within this quadrant at the pre-intervention stage. This is simply not afforded within the Levels framework as there are a high number of both Level 1 and 2 responses but neither of which demonstrate exactly which aspect (what or how) influenced the overall placement of the response where both aspects were not in full alignment.

Overall, while each teacher's experience is, and should be treated as, unique, it is important to acknowledge that Allison was clearly starting from a higher baseline than Cara and Donna. Unsurprisingly, there are several reasons why this may be the case, though it is not possible to determine these from her responses. For example, Allison is the youngest participating teacher and thus may have benefitted from recent updates to ITE. However, this could be contrasted with the view that she is technically the least 'experienced'. Another possibility could be that Allison worked in a school where senior leaders have been working with teachers to develop new

practices that have worked in other schools and so the experimental quality comes from within her environment, making it more likely for her to consider experimenting with her practice. Donna, on the other hand, was in a leadership role and has had access to a network for support and ideas (albeit reducing in impact over time) and Cara often asked senior leaders for advice and suggestions too, though she did not find these particularly forthcoming. I would suggest that, as is the case for pupils, the differences between teachers are made up of many factors including, their own school experiences, their teacher education and their working environment.

Post-Intervention

Figure 14 demonstrates Allison's responses plotted onto the LTNF and the MTN:
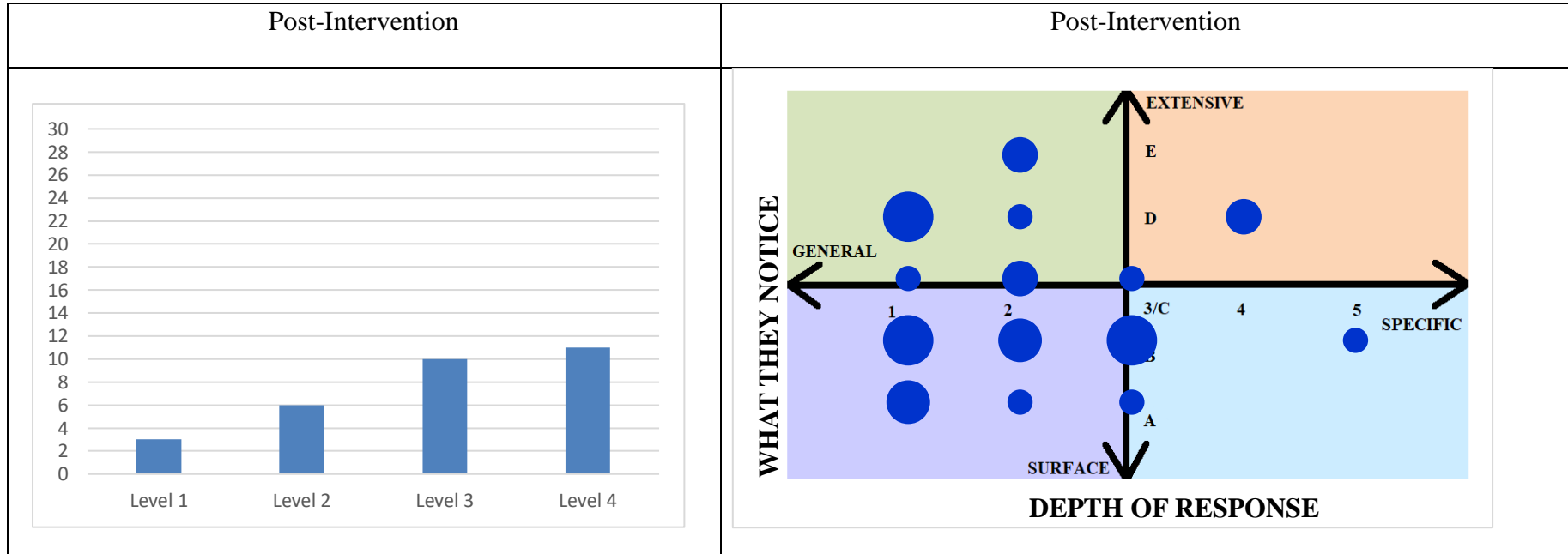
Figure 14 - Allison Post-Intervention data

The improvements in Allison's Noticing ability are evident within both frameworks. It is also clear that her improvements and progress are evident to a greater extent than Cara's and Donna's.

A key notable improvement is in the reduction of Level 1, Baseline Noticing responses. These were significantly fewer Level 1 responses than any other level within the framework, showing that Allison shared only a few low-level responses in terms of what and how she notices. The same representation is illustrated on the Matrix. It is positive to see that the number of responses within the General-Surface quadrant is less dominant over the other quadrants and there is a good spread upwards. Also, it is very positive to see that there is a reduction in the number of full Surface and full General responses within that quadrant and that there are other responses within other quadrants, or higher aspects within the General-Surface quadrant that have a greater number of responses. Indeed, responses even within the General-Surface rarely skim the surface of what is noticed and lack any detail in response. For example:

> I think particularly when I looked at the culture capital idea and focused on a pupil who on the outside would look like they weren't understanding much but actually they were just disengaged because they weren't interested. Yes, I would say it's [comprehension] probably not as obvious all the time; you have to delve in deeper. (Allison: Post-Intervention)

This response sits within (3, B), the midpoint of what is noticed, but with only partial Surface level in terms of the depth of response. Allison showed that she observed her pupils and attended to pupils' experiences within the lesson, interpreting that instead of them not being able, they were unengaged in her lessons. This is an important shift in how Allison used what she observed to show how she went deeper to explore

why she came to a new conclusion, thereby helping her to shift future practice for the provision that these pupils experience. What was missing from her response was enough depth to understand how this shift came about, how she used this information, and any wider connections in relation to these pupils. These deeper reflections would have helped her to access higher-level responses (the shaping component) (Van Es & Sherin, 2021). This response still demonstrates the impact of what she has noticed and how this helped to reframe her approaches. The positive impact here was also reflected within the LTNF, which is Level 3, Focused Noticing as Allison shared what she noticed about her pupils and how she used this within the context of recognising pupils' Cultural Capital. She connected how this recognition helped her to explore their engagement further; more depth would have helped to isolate how she used this information further and what the shift was, thus moving towards the highest level.

Interestingly, there is only one example of a Specific-Surface response within Allison's post-intervention data. This was the same for Donna, and Cara did not have any responses within this quadrant in her post-intervention data. Interestingly, it appears the shifts come upwards and then along into more Specific Noticing for all teachers.

For Allison, an upward shift was also evident, with a greater number of responses in the post-intervention data within the General-Extensive quadrant. Take the following example:

> The use of reciprocal teaching was great for me as we had tried the Book Detectives approach before, but I hadn't really understood the reciprocal nature of it and how to actually teach it in a way where pupils become independent and transfer this learning. It was great to know the theory behind

the practices – this isn't something I feel teachers have enough access to but actually, I think having that understanding behind the practices really contributed to me being able to implement it successfully in the classroom. (Allison: Post-Intervention)

This was situated in (2, D) within the General-Extensive quadrant because, while Allison did not drill down into pupils' experiences within her reflection, therefore lacking specificity, her reflections were still partially Extensive as there was some depth in how she reflected on her practices. She identified the role that theory can provide in supporting teachers' understanding of the practices they employ. Within the LTNF this response was categorised at Level 4, Extended Noticing because Allison used the link between theory and practice as evidence to consider teacher learning more widely and how the lack of theoretical underpinning in new practices affects their success. Arguably, the lack of detail in what was noticed makes this difficult to sit within this level, as there is a lack of detail given to what is noticed about pupils' experiences. However, the shifts within Allison's reflections were strong. Again, this is where having the Matrix helps to even this out and provide balance where aspects can be taken within their own right and not a 'best fit' model. This has been found across all teachers' experiences in this intervention.

It is also worth highlighting that this upward shift within the Matrix from General-Surface to General-Extensive was seen within Donna's post-intervention data. It seems to be the case that Noticing naturally progresses to higher levels within the depth of responses provided. For it is within the General-Extensive quadrant that (2, E), the highest level of depth was evident. Take the following response:

I really think, for me, the use of Cultural Capital is something that is a new concept but hugely influential now in terms of my planning. It's turned the

approach upside down from thinking about where they need to be to what do they know and how can I use that as a basis for learning. That is something new and exciting and has had the biggest impact on my own practice. For example, I've now introduced more drama, it's more extended and whole-class and really the focus of the learning which is new and that's because the kids just loved it and got so much out of it. I've also introduced code spaces which I love, and the kids love it, it is a virtual reality to show what might happen next, to summarise, to recall a scene – it's so varied. And I wouldn't have looked into and really started to extend these if it wasn't for this study focusing on comprehension. It's really highlighted to me the importance of getting this right. (Allison: Post-Intervention)

This example shows only a limited focus on drilling down to a more Specific response of that wider classroom level with only limited connections to pupils' experiences in detail. However, it sits as fully Extensive within the depth of response, where Allison used what she notices to problematise her practice, to think of solutions and next steps, showing that she is attending to, interpreting what she notices and using this to shape her future decision making, all three of the core components of Teacher Noticing (Van Es & Sherin, 2021). She discussed how she connects and puts together her observations, thinking about what was successful about them, what the impact was, and offers wider considerations. This is very positive in terms of Teacher Noticing. Indeed, this response was categorised as Level 4 for its depth and detail, the connections to wider teaching and learning, the notable examples and use of evidence that is explored in detail and how she used what she has learned to provide different experiences which she noticed positively impacted on her pupils. For such a high-level response, there is still a link within both

frameworks that recognises the learning that has taken place and the personal impact on Allison. The subtlety comes from the difference in what Allison noticed that is not afforded within the LTNF.

The learning that Allison demonstrated within her responses has also shown impact within the Specific-Extensive quadrant. A few responses demonstrate specificity in what she noticed, and partially extensive responses highlighted in the following response:

> I find that with my less-experienced group, I feel that they still need grouped in terms of ability as they are still learning to read fluently. The focus is not always on comprehension, so there are opportunities to group them differently, but I think the majority of the time I will group them by their interests now, which has really increased their engagement. (Allison: Post-Intervention)

This response is not fully Specific, nor fully Extensive; however, Allison showed the sense of criticality essential within Teacher Noticing. She demonstrated that she still saw the role of ability groups as important in terms of pupils' technical skills, combining this with the learning from the CLPL to conclude that there are different aims for reading comprehension, therefore, selecting appropriate practices to target teaching aims to offer a good mix for her pupils. She also provided evidence behind the interpretation of what she noticed and draws on the impact she has noticed from pupil engagement to further support this. Allison's response shows that she is becoming empowered to make decisions that she thinks are in the best interests of her pupils, and that the intervention helped her combine new practices with her own existing approaches to provide a better balance of pupil experiences. She also

observed a positive impact on pupils' engagement within these lessons generally. This response, therefore, was categorised at Level 4, Extended Noticing.

Within the LTNF, the results are arguably overly simplistic. Most responses reside at Level 4, Extended Noticing, and the least number of responses at Level 1, Baseline Noticing, showing that most of Allison's responses sit within the highest two levels of Teacher Noticing, shifting her Noticing abilities from the pre-intervention data capture. Importantly, the data, when plotted on the Noticing Matrix, is more complex and there are some aspects where both aspects of Noticing are not in alignment. The Matrix arguably provides a more accurate representation as both aspects are plotted independently of each other when compared with the LTNF that combine both elements. The Noticing Matrix appears, therefore, to offer a truer reflection of teacher noticing and, therefore, their learning.

6 Evaluating the Frameworks

This chapter contextualises the findings in relation to the literature, interpreting the results, demonstrating how the MTN illuminates teacher learning via Noticing. In Part One I identify and interpret key themes from the case studies including: Changes in Teachers' Perspectives on the Purpose of Reading Comprehension Lessons; Gaining New Practices to Promote Creativity and Confidence; The Impact of Teaching on Learning and Learning on Teaching; and The Importance of the Learning Environment: Ability and Positioning. In Part Two I interpret the representation of teachers' experiences on both Teacher Noticing frameworks, contrasting, and comparing the findings. Thereby allowing me to evaluate the effectiveness of the Matrix to accurately represent teacher's Noticing abilities. Research question one is addressed through the demonstration and analysis of each teacher's Noticing abilities represented on the two frameworks. The frameworks are contrasted and evaluated with specific examples selected to demonstrate the potential of the Matrix to represent their experiences in an accurate, multidimensional way. Research question two is addressed through a discussion of what has been learned from the high-level Noticing responses, how these are typified and what this means for the developing field of Teacher Noticing, with a specific focus on the core Noticing components.

6.1 Part One: Evaluating Teachers' Changes via the Frameworks

The key themes taken from teachers' experiences are outlined below:

6.1.1 Changes in Teachers' Perspectives

All participating teachers reported that, following the intervention, they had a change of perspective about what was important in reading comprehension lessons – they

noticed different things about teaching reading. Each teacher spoke in detail about how they felt they had developed a new purpose behind their reading comprehension lessons. They reported that they had reflected on 'what they teach and why they teach it' within reading comprehension, generally shifting from seeing a singular focus on the cognitive knowledge and skills to recognising the affective, personal connections to comprehension which readers bring through their own knowledge and experiences. They each came to recognise, to varying extents, that providing a balance of the purpose and intent behind their lessons was more effective than focusing on a one-dimensional approach, because it helped them to reach more learners. Each of these perspective changes represents a change in Noticing.

These findings parallel where Van Es and Sherin (2021) found new evidence to suggest that what teachers paid attention to shifted over the course of the investigation. Their participants did not simply discuss the same points, they highlighted new thinking and new perspectives at the post-intervention stage than that shared in the pre-intervention data. The findings across each teacher's experience within the present intervention echo these findings and show that teachers can shift and reprioritise their attention within the classroom. What is key to this thesis is that the findings from the present investigation have been more accurately represented within the MTN than the Van Es (2011) LTNF because there is far more specificity demonstrated from all teachers when comparing the pre and post data. This is not evidenced across Van Es' Four Levels of Noticing because, while gradual improvement is evident from pre- to post-intervention, seeing specifically how the depth of teachers' responses developed provides a far richer representation of the shifts in their perspectives. This shift cannot be isolated in the same way on the LTNF as, by design, it focuses on pupils' experiences (a hallmark of increased

Noticing ability within this framework), rather negating the teacher's perspective, meaning that many statements were not categorised very highly on the LTNF. These multidimensional characteristics of Noticing were accurately captured within the Matrix.

Each teacher also recognised a shift from a sole focus on answering questions to seeing the purpose behind using quality texts to guide lessons. They also recognised using these quality texts to support collaborative meaning making through supported conversations between teacher and pupil, and amongst pupils themselves, to teach reading comprehension effectively. What each teacher came to value within the subject area changed during this intervention, and this is evidenced through the Matrix. The findings support, as Tasler and Dale (2021) suggest within their framework, that teaching practice both shapes and is shaped by conceptual frameworks. That is, changes in practice lead to changes in thinking, and the changes in thinking subsequently lead to further changes in practice. Indeed, the three interconnected aspects of their framework – teachers, students and place – each influence, and are influenced by, the other in teacher learning (Tasler & Dale, 2021). In my investigation, this effect can be seen within each teacher's experience, where seeing the impact of the changes in their practice, led to changes within their own thinking and subsequently impacted on their future decision making. This is where the third Noticing component, shaping (Van Es & Sherin, 2021) comes to the fore.

When considering the findings within my investigation, I would argue that within Teacher Noticing, it is the *shaping* component that is the most important. Van Es and Sherin (2021) state that Noticing has three core components: attending, interpreting, and shaping, and this is generally accepted by others (for example, Zeeb et al., 2023). What is interesting about the findings within my study, is that all of the

highest Noticing responses categorised were done so where shaping took place, where teachers used their observations, analysing these and forming conclusions to inform their next steps and wider pedagogical thinking. It is this quality which I propose is the active agent, separating Noticing from simply reflecting, which I suggest could encompass attending to and interpreting information from within the classroom. Considering that shaping itself brings an intentional curiosity to what is noticed, where teachers are active within their environment, where a teacher "seeks to learn as well as to teach" (Aukerma & Aiello, 2023, p. 10), this component, is more effectively demonstrated within the MTN. Exploring what teachers notice and the depth of the response allows an examination of responses that do not have to improve in both reflections on teacher and pupil learning simultaneously. Rather, they may explore both separately as was the case, in my intervention, where teachers were Noticing at high degrees, they were thinking about their own practices, perspectives, and approaches and how these had changed. This, I argue, is using Noticing to shape teacher experiences.

It may be worth noting that shaping does not reside in reflecting on pupil experiences alone. This finding was also identified (although not explored in detail) within a similar study by Damaru et al. (2022) in mathematics. A key observation of the outcomes of their three-teacher intervention was that all teachers focused specifically on the effectiveness of their lessons within their reflections; they state, "not all statements about the effectiveness of lesson elements addressed student thinking" (p. 265). They proposed that Noticing should not be limited to focusing on pupil thinking and they welcomed a broader focus for further research. The Matrix helps to support a way of representing the shifts that arise from teachers as learners.

6.1.2 Changes in Curriculum Design

Building on the theme above, all teachers reported gaining new practices to draw on when teaching reading comprehension – what they noticed included curricular reflection. For Cara and Donna, all three practices were new, and for Allison two out of the three practices were new. Each teacher shared that they gained new ideas for use in the classroom. They extended this by adding that exploring new practices had opened them to new ways of working, in some ways acting as a springboard to other ideas and ways of extending and developing practices. The teachers each reported that they were able to design lessons that were far more engaging, less boring and, as a result, showing that they had become active learners, critical thinkers, and reflective practitioners (Kim et al., 2019).

Each teacher recognised that the pupils in their class needed different things, that cohorts are unique and having different practices to draw upon offers different opportunities for pupil learning and engagement. By engaging in this investigation, the teachers demonstrated criticality, taking risks, thinking creatively and trying new things, which led to more thoughtful pedagogical decision making – hallmarks of Teacher Noticing (Ellis & Simpson, 2020). The teachers shared that the CLPL provided an opportunity to refresh and revamp their practice with increased confidence, autonomy, and creativity, showcasing an experimental approach that helps to create inquiring teachers who adopt the process into everyday practice to become active and empowered in their own pedagogical decisions (Guerriero, 2017). These findings support the work of Roose et al. (2019) who argue for greater awareness of teachers' responses to learner diversity within the classroom. They note that where teachers recognise the value of equitable learning environments, they become more likely to notice these components in future reflections. This was

evident within each teacher's experience in this study. They reported feeling more confident and empowered to make decisions based on what their pupils need, to think creatively about how to use the new practices to enhance pupils' classroom experiences based on the evidence they interpreted that suggested what their pupils might need.

The Matrix results challenge a key idea within Roose et al.'s (2019) findings. They conclude that teachers' beliefs were the central factor in influencing what they notice. They explored three beliefs as the basis for how teachers see classroom events: professional beliefs about diversity, beliefs about differentiating the curriculum, and growth mindset by implementing two inclusive practices: positive teacher-student interactions and differentiated instruction. Interestingly, teachers' beliefs could be seen as a distraction that not only takes Teacher Noticing into a field of 'thinking about thinking' which cannot truly be observed or understood within most frameworks, but it also fails to account for the levels of problematisation and criticality that take place at high levels of Noticing. If teacher beliefs are central to how they filter classroom events, as Roose et al. (2019) propose, it would be expected that teachers' beliefs about their own learning would reflect this also; however, no link was found. Whilst it must be acknowledged that Noticing does to an extent centre on teachers' own worldview, this is a problematic way of defining what is a central quality for typifying developed Noticing ability. This conflicts with the results within this investigation because I found that as teachers became more critical, reflective, and active in their Noticing, they became more confident in their rationale, analysis and decision making, thereby becoming more objective.

6.1.3 Changes in Participant Awareness of Effects of Teaching on Learning and Learning on Teaching

Within this intervention, teachers became far more aware of themselves as learners, where the teachers developed their awareness of self and, to differing extents, transformed how they act within the classroom (Portilho & Medina, 2016). This echoes previous research, as teachers gained more when they became present in the activities, becoming more connected to their practice, and therefore more able to improve it (Korthagen, 2017). The teachers showed, through their reflections, that they stepped back to cast a critical eye on what they do, why they do it and to understand the impact on themselves and their class (Tay et al., 2023). This is best shown within the Matrix because there are far more extensive responses for all teachers at the post-intervention stage than the pre-intervention stage. This axis looks specifically at the depth of teachers' responses where they demonstrate the qualities of criticality, problematising and informed decision making based on their Noticing. This cannot be isolated to the same extent on the LTNF as sometimes responses may be placed in a level that puts more weight on what teachers notice rather than how they notice, leading to seemingly lesser impact.

The participating teachers reported that while they recognised the benefits to themselves as learners, becoming more flexible, creative, and confident, they each also highlighted the positive impact they saw in how they think their pupils benefitted. They each shared that they had gained an increased awareness of the potential and capacity to harness pupil engagement within lessons. Each teacher, by focusing on individual pupils' experiences, came to recognise that in many cases, a pupil who appeared disengaged within lessons was not able to access the learning and the reason behind their disengagement was different than they had originally

thought. In some cases, rather than a child simply displaying 'low-level' behaviour for 'no reason', none of the texts interested them; in other cases, the reading environment was not welcoming. All teachers focused on these individuals' experiences with a new perspective. Through new interpretations of the evidence within their reflections, they drew different conclusions than they had previously. This led to the teachers re-evaluating their assumptions as well as considering their role in addressing pupil engagement. Korthagen (2017) argues that often teachers make a quick analysis of what is taking place without considering all of the factors at play, leading them to form either inaccurate conclusions or make pedagogical decisions based on inaccurate information. My investigation supports the literature in that the teachers were no longer overwhelmed by the whole-class picture (Jacobs, 2017) and 'batch processing' (Erickson, 2011) information that was inaccurate and leading to simplistic conclusions of what was taking place. Rather, they were able to build up their whole-class picture from individual pupil's experiences, forming far more useful conclusions on which to base next steps (Star et al., 2011).

The frameworks for Teacher Noticing demonstrated the impact of how pupils' individual experiences shaped teachers' reflections and next steps. Within the Matrix this was effectively supported through charting *what* teachers notice within its own axis. This allowed for a specific focus on pupils' experiences individually to be represented within Teacher Noticing. Within the LTNF, this impact cannot be as easily represented because *what* teachers notice cannot be isolated from *how* teachers notice, making it more difficult to represent where shifts take place from pupils' experiences. This is particularly challenging as many researchers have focused on pupils' experiences as the cornerstone of high-level Noticing. Take Aukerman and Aiello (2023) who explored Teacher Noticing within a post-pandemic era; they

argue that there are four domains essential for Teacher Noticing: children's emotions; funds of knowledge; relationships; and purposes. They found that these domains are significant in supporting high-quality, equitable practice as teachers develop their understanding across the four domains. Interestingly, while a focus on pupils' learning and experiences was impactful for the teachers in the present investigation, I argue that what is missing from the domains in the likes of Aukerman and Aiello's work is any focus on the teacher. I would argue that the teachers' experiences within my study demonstrate a high degree of Noticing when exploring a balance of both pupils' experiences but also where teachers reflect on their own practices and perspectives. I think that focusing solely on pupil domains supports a framework that requires pupil experiences to be the focus of a top Noticing response. This was simply not evident within this investigation. I propose that extending domains to explore teachers' experiences opens up new conclusions and shows even greater impact where teachers, through exploring their practice and experiences, demonstrated a high degree of Noticing. Within this thesis, there was not the space to explore Aukerman and Aiello's (2023) work in relation to the matrix, but this work may inform future research.

6.1.4 Changing to Noticing the Learning Environment: Ability and Positioning

Following the CLPL activities, all teachers recognised that 'more' and 'less' able comprehenders were far more complex to define than they had originally thought. They also identified, to differing extents, that there were far more factors involved in determining the difference and that teachers can influence far more of these factors than they had previously thought. This links with one of the key studies on metacognition, 'Learning to Learn', where teachers were supported to develop their critical thinking, moving away from simplistic reflections, from pondering 'how' to

exploring 'why' (Wall & Hall, 2016). Through developing their interpretations, teachers in this investigation considered the impact of the classroom dynamics when groupings centred on pupil interests as opposed to abilities. They all shared that this shift was significant in challenging their perception of how they limit pupils' experiences, especially the lower ability pupils, when in fact pupils are far more capable when given the opportunity and support. The findings also support findings by Van Es et al. (2017) who observed four teachers' Noticing abilities within mathematics and found that all teachers developed their perspectives on pupil status and positioning within the classroom including pupil groupings, ability, participation and engagement within lessons, and how this is influenced.

The findings of this intervention support findings by Damrau et al. (2022) who identified that "what teachers noticed seemed to be influenced by their expectations of their students" (p. 269). Within this study, teachers repeatedly underestimated pupils' abilities within the subject area. There were, however, no cases of teachers overestimating pupils' abilities recorded within this investigation, in contrast with Damrau's intervention. It may have been possible that this teacher was batch-processing (Erickson, 2011) high-level policy information in relation to pupil attainment results (as discussed within Damarae's research), thereby pressing forward with teaching approaches before pupils were secure and ready. This could be seen as another outcome of teachers using inaccurate information to inform their teaching (Sherin & Star, 2011), in a different way than was seen in my investigation. If the sample size of my intervention was larger, instances of teachers overestimating pupil abilities may have been evident.

Considering the learning environment for teachers, the findings within the present investigation also contrasted results from the systematic review conducted by Konig

et al. (2022). Within their review they found that across studies, regardless of method and design, the most experienced teachers performed better than less-experienced teachers in relation to Teacher Noticing. They say that this supports the narrative that Noticing fits with the development of teachers from 'novice to expert'. The findings from my investigation sit in contrast to these results. The youngest serving teacher (Allison) had a higher baseline starting point and a higher end point within both the LTNF and the MTN. The opposite was true for the longest serving teacher Donna, who had the lowest levels of Noticing pre-investigation; although she made the most improvements, she did not present the highest number of top Noticing responses at the post intervention phase. This is interesting because it challenges the narrative that teachers develop from being a novice to expert and shows that early career teachers can be very capable of Noticing at high levels and that long serving teachers can find Noticing challenging. I would argue that this supports the view that all teachers are learners themselves, with their own experiences and learning feeding into what they teach and how they teach it, supporting the need for a person-centred approach to teacher learning that does not place limits or expectations on their abilities or expected trajectory. This, I argue, is a far healthier view of teacher learning generally that parallels more of approach to pupil learning which many argue should be sought in schools (for example, Kim et al., 2019).

6.2 Evaluating the Representation of Teacher Noticing

Within this section, I explore what the results mean by examining the suitability of the Matrix for representing teachers' experiences and consider what this tells us about Teacher Noticing as a result.

6.2.1 Learning to Notice Framework

Within the LTNF (Van Es, 2011), the improvement in teachers' Noticing abilities was evident across all three teachers when considering the data. The results have been summarised into the following Figures 15, 16 and 17, which chart the percentage of statements against at each level of Noticing against the overall number of responses within that data capture.
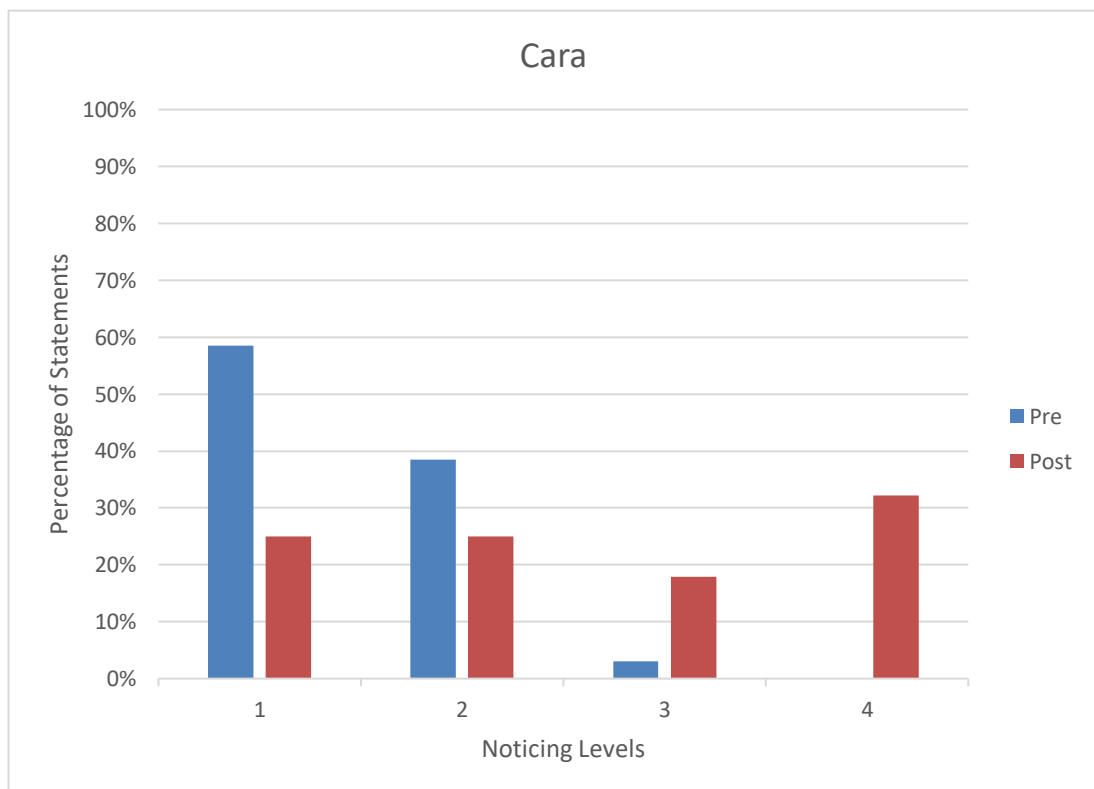
Figure 15 - Cara: LTNF Summary
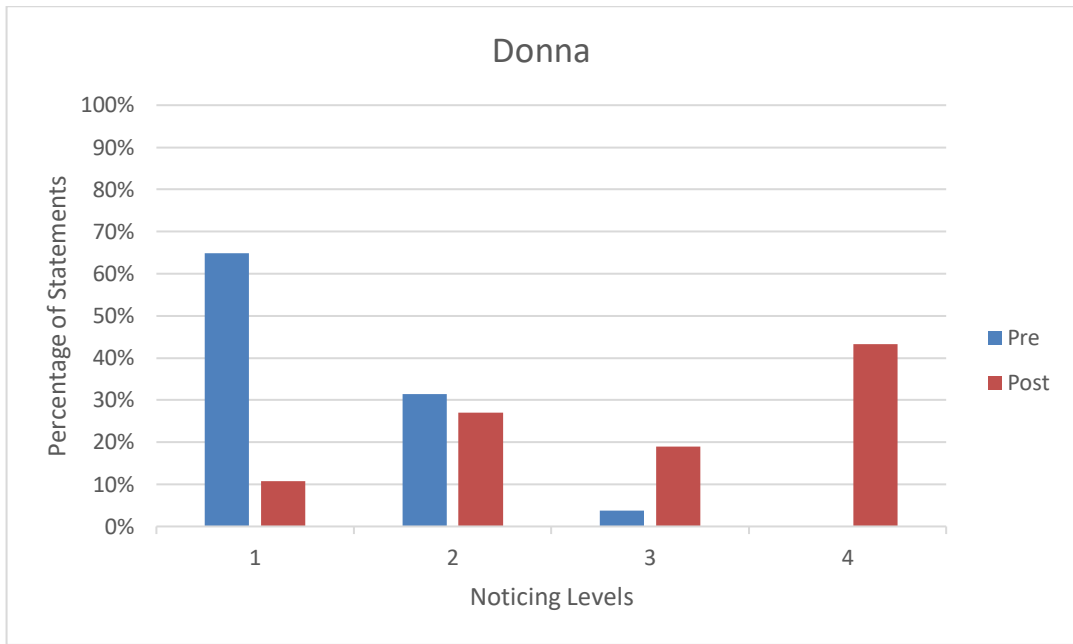
Figure 16 - Donna: LTNF Summary
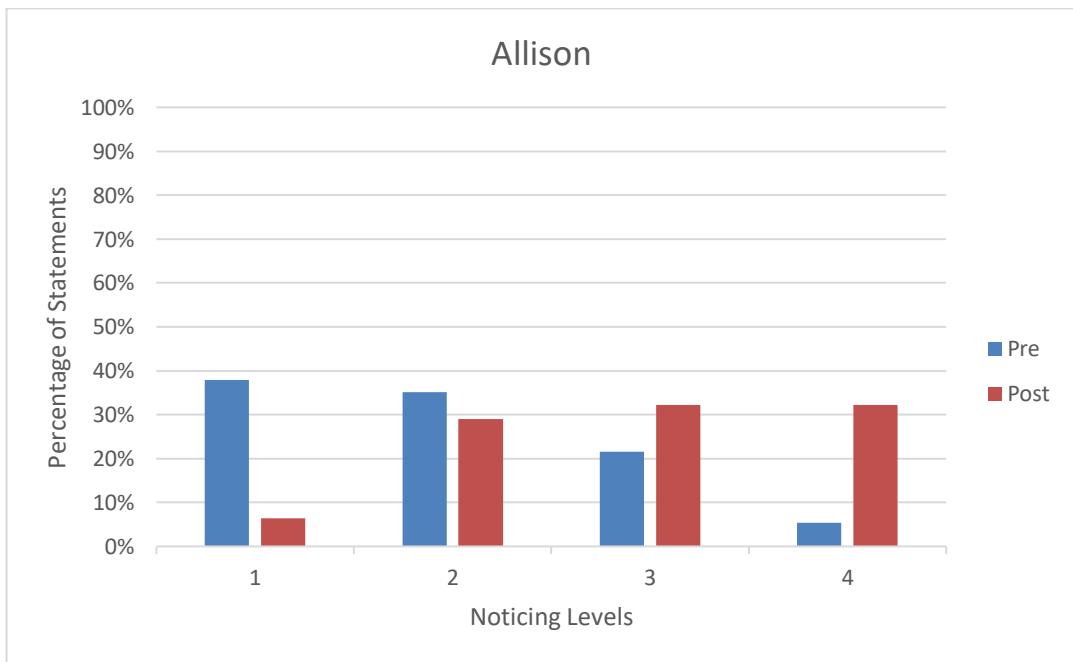
Figure 17 - Allison: LTNF Summary

6.2.2 Matrix for Teacher Noticing

Within the MTN, shifts in teachers' Noticing abilities was evident across all three teachers from pre and post interview data. The blue grid points represent the pre data and the red points represent the post data in the following Figures: 18, 19 and 20.
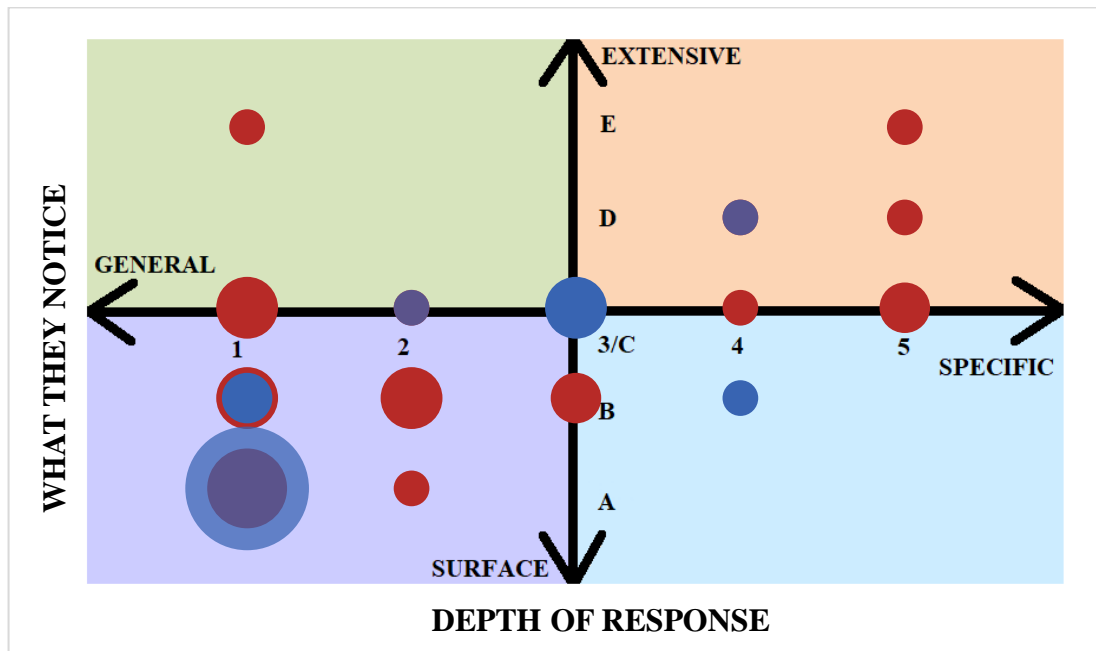
Figure 18 - Cara: MTN Summary
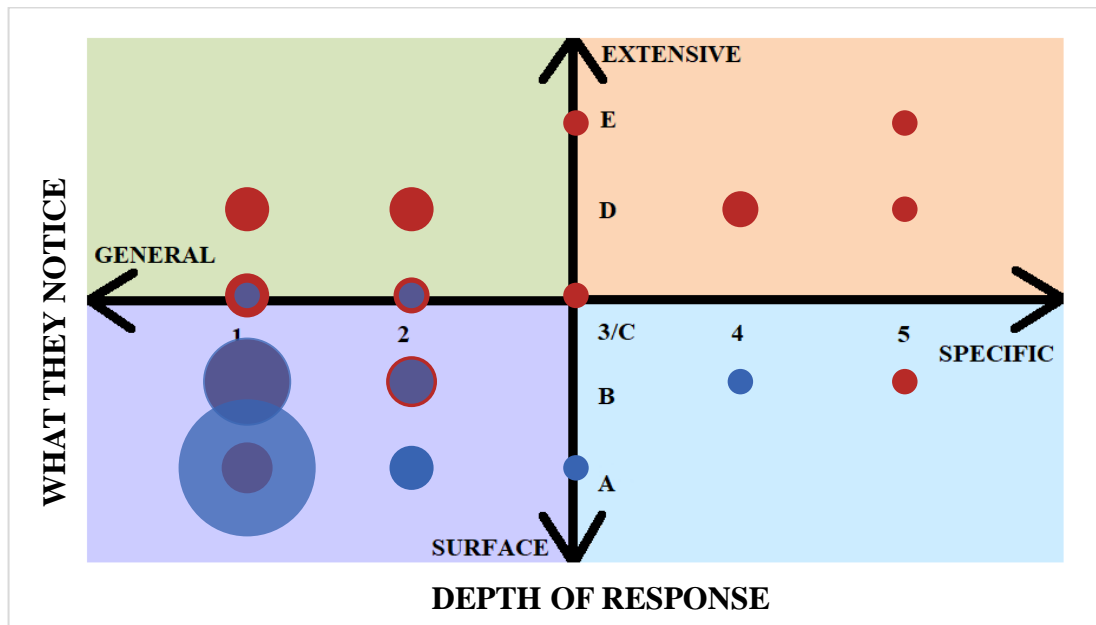
Figure 19 - Donna: MTN Summary
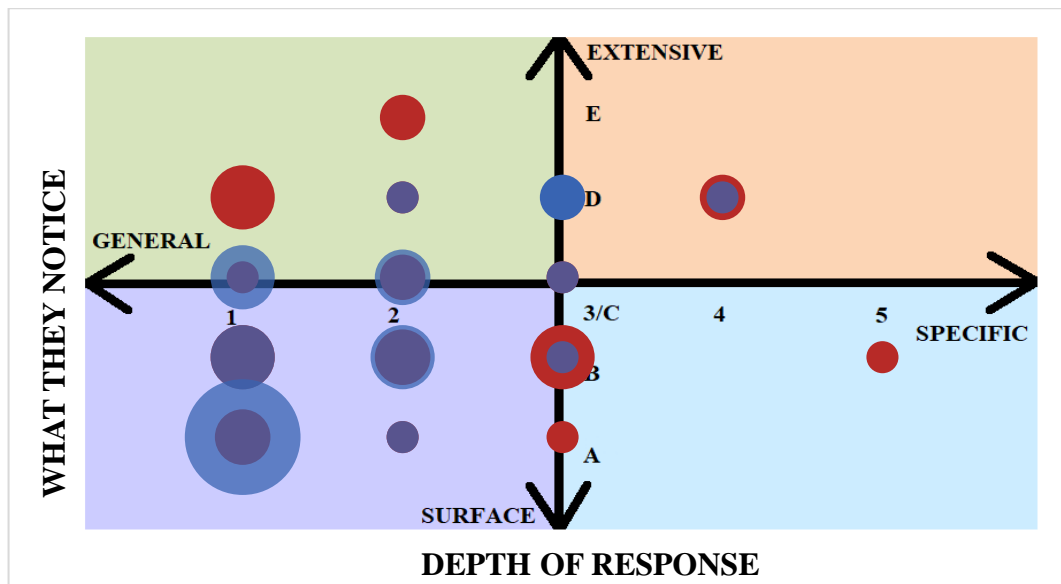
Figure 20 - Allison: MTN Summary

The three teachers' experiences seem similar within the LTNF (Van Es, 2011), as their post CLPL data shows more higher-level responses than pre-intervention data. The profiles for Cara and Donna at both pre- and post-intervention stages are very closely matched, with similar distribution across the Levels from the beginning and the end point of the study. Cara and Donna had similar experiences, while Allison started from a higher point and ended at a higher point with similar improvement. Thus, MTN shows a far clearer profile for each teacher.

6.3 Evaluating the Effectiveness of the Matrix

Taking the summarised findings from both Teacher Noticing frameworks there are some key differences in the outcomes for each teacher. These differences, I argue, can be accounted for by the differences in the construction and application of the LTNF (Van Es, 2011) and the MTN. I argue that the findings illuminate four key problems in the Van Es framework that the MTN helps to address, demonstrating the value, purpose, and usefulness of this in accurately representing Teacher Noticing. This shows that a framework for Teacher Noticing can be worthwhile in supporting

the development of the field, especially when the voice of teachers themselves informs the categorisation of their Noticing (Kersting et al., 2016).

6.3.1 Challenge 1: Combining What and How Teachers Notice

There were some examples of responses that aligned in terms of their categorisation and representation onto both the LTNF and the MTN. Interestingly, these were only found when Teacher Noticing was either at a very basic, limited level or where responses were fully extensive and high-level. No alignment between the frameworks was evident where responses were mapped at middle levels or midpoints within the quadrants, where the categorisation of responses was not straightforward and where both aspects were in alignment. There are a few reasons as to why this may have been the case.

One of the main challenges I identified, echoing Sherin and Star (2011), is that Noticing is complex, making it challenging to chart both *what* and *how* teachers notice in equal measure. The LTNF by design charts both these aspects together across the Four Levels of Noticing. 'What' and 'How' are not charted independently within this framework. This has led to, as Amador et al (2020) describes, researchers taking artistic licence with the application of existing frameworks. The theory behind the LTNF's (Van Es, 2011) construction is that teachers progress from Level 1 to 4 and that crucially, *what* and *how* teachers notice are connected, with Levels generally the same across both categories (Van Es, 2011). Van Es (2011) proposes that as teachers become more expert in their Noticing, they can step back from practice and analyse the impact of their pedagogical decisions on pupil learning, and vice versa, as well as exploring pedagogical solutions to challenge and direct their own next steps (Van Es, 2011). However, when exploring my data there were instances where I either had to categorise a response 'rounded up or down' where, for example, one

aspect of what teachers noticed was Level 1, but how teachers noticed was Level 2. In other words, there were aspects of their response that met the criteria for different levels. For example, within Donna's post-intervention interview, the following response was shared, with the coded extract found in Appendix number 7:

> The second set of lessons focusing on an individual and reader identity, we have done some of that and what was really helpful with that is it gave me an opportunity to get to know the children a bit better and their reading habits a bit better. That has been useful and had an impact on the type of books we have read and encouraging children to share favourite books and create a buzz around certain texts which everyone wants to read. I feel I know more about how to engage individuals and really look at their reading habits and think about what we can read as a class and how I can help them develop a network of readers. (Donna)

Within the LTNF, this response was categorised as Level 3, Focused Noticing. This is problematic as *how* Donna noticed was representative of this level, where she highlighted noteworthy events, provided interpretive commentary and used some form of evidence to inform her conclusions – all hallmarks of this level. However, what was missing was the same level of focused Noticing within *what* she noticed. At this level, the focus should be specifically on pupils' thinking and their experiences, concentrating on individuals or small groups and discussing what this means in a very focused way. I would suggest that this was not evident to the extent that a response at that level should be. Rather, I think there is stronger evidence that this response is Level 2, Mixed Noticing, for what teachers notice, where there is a mix of thinking about pedagogy and practice, and pupils' experiences and behaviour more generally. Using the Van Es framework leads to a judgement being made to

either round-up to Level 3 or down to level 2. This problem did not happen within the MTN as this response was categorised as General-Extensive, within the second highest quadrant for Noticing. This is because, in accordance with how teachers notice, the depth of the response from Donna was detailed; there was reflection and some criticality over her decision making and its impact, where she thought about teaching and learning as inter-connected at a deeper level – hallmarks of this aspect. However, in terms of what was noticed, this response is more accurately categorised as a General response that focuses on pupils' experiences overall, with limited detail as to how individuals' experiences are collectively built, which shaped Donna's conclusions. In this way, the Matrix more accurately shows the placement of this response that is both becoming more advanced in Noticing from a pedagogy and practice view, while focusing on the wider classroom perspective without drilling down to pupils' experiences within that to add further support and interpretation to what is noticed. This supports the view shared by Wei et al. (2023) that evaluates the LTNF as "too vague and open" (p. 2). As demonstrated above, having to round up or down responses adds another layer of interpretation to the categorisation of the data. It was found within my investigation that, in contrast with the LTNF (Van Es, 2011), what and how teachers notice are rarely in alignment unless the response is highly limited (Level 1) or significantly extended (Level 4), and it was more often the case that both aspects were found to be at different levels.

This insight is supported by Scheiner (2016) who notes that where there are limited numerical scales used to categorise Teacher Noticing, the researcher determines the categorisation by adding another layer of interpretation to the data, which fails to represent Noticing in a multidimensional form. This, I argue, is a part of the design that is flawed as it relies too much on the researcher having to decide which aspect(s)

weigh the most heavily. Keeping this consistent felt impossible. There were many other occasions where there were conflicting results of placements for what and how teachers notice, and that these did not algin at the same level. The Matrix is arguably a more accurate way of representing these two aspects, a flexibility that is not available within the LTNF. The Matrix seeks to address what Kersting et al. (2016) describes as the 'chicken and egg' problem at the heart of Teacher Noticing frameworks, whereby theoretical developments within the field are limited by the measures to explore Noticing, with the converse also being true.

There were many examples within the teachers' responses that showed a high degree of Noticing in relation to what is noticed, but with very little depth of response, and vice versa, showing that it is highly likely that complete agreement from both aspects is simplistic and brings into question the accuracy of how responses fit the criteria outlined in the framework. If one aspect of Noticing is more important than the other, then this should be reflected within the framework to ensure the researcher correctly categorises responses from teachers. The separation of why and how, therefore, leads to a more accurate and internally consistent measure of Noticing as offered by the Matrix. With respect to the previous example, the converse was also found to be true, where the balance of what and how teachers notice resulted in what teachers notice being categorised higher than how they notice, still resulting in an overall Level 4 response. When asked about the impact of learner engagement and enjoyment in the series Cara's post-intervention response was as follows:

> The culture one really opened my eyes up. I thought I knew the children, but
> I actually honed into more of them. The first lesson was a book I chose, the
> second lesson was when I honed into that one specific child and this little one
> wouldn't engage at all but because it was a book that had been read many

times over at home and I read to the whole class he sat, listened and answered. And he knew so much about it, he had that subject knowledge, I had found that hook for him. It changed everything for me. So, the very next day, lesson three, I made sure it was another book of his choice, but not one he brought in, and it was exactly the same – high quality engagement in literacy. I couldn't believe it. I have never been able to get him just to sit and it made such a difference. He now has five books about countries and places in the library area, and he loves getting a chance to read these each day. He's actually now got another pupil engaged in these who was also a non-reader. (Cara)

The coded extract found in Appendix number 8. This response was categorised at Level 4 as it was targeted on Noticing a curricular area and was focused on an individual child and the focus was specifically on this child's experience, how this linked to his engagement, what she had learned from his experiences – indicating a Level 4 response from what she noticed. However, in terms of how Cara noticed, this response would only have been logged at Level 2. The response lacks reflection; while it is focused on the child, the observations are based on surface-level behaviours and do not explore the 'specific' nature of the observation. What is missing is the deeper connections with what this means for her teaching, how she uses this, what it could mean for other pupils and how she proposes to extend this. This is a challenging result, which overall led to my categorisation in favour of what was noticed as Level 4 for the specificity to pupil thinking and experiences. When the above examples are plotted on the MTN, the response is categorised within the Specific-Surface quadrant. This is because there is evidence of Cara taking time to focus on this individual pupil's experience, what the impact was, how this helped to

inform her thinking, which was all very positive. However, it also allows me to illustrate that the lack of depth in understanding what made the difference, the 'so what?' of this shift is not discussed. There is no evidence of wider thinking and connections, therefore resulting in a surface response in terms of the depth at which Cara is Noticing. Again, it is the design of the Matrix that allows both examples to more accurately balance aspects of Noticing by categorising each separately, helping the researcher to focus on ensuring the criteria can be more accurately applied.

6.3.1.1 The Aspects of Noticing Within Each Framework

Through applying both frameworks for Teacher Noticing within this investigation, I argue that *how* teachers notice (from the LTNF) is not as valuable as charting the *depth* of their response (the MTN). Both frameworks chart *what* teachers notice, either within Four Levels or within a five-point scale; however, they explore a similar concept of how teachers are able to zoom in and focus on individuals' experiences and combine these with the bigger picture to form a detailed view on which to base decision making for pupils' learning. The difference within the aspects of the frameworks comes in the second aspect. Shifting the focus from *how* teachers notice to charting the *depth of response* means that there is scope to recognise the criticality and problematising that takes place, moving from a response that provides surface-level detail and analysis to an extended response that shows teachers considering the 'so what?' of their observations, making deeper connections. The crucial difference being that this does not have to specifically relate to a single event, interaction or occurrence, the specificity within the Matrix relates to what teachers notice. A subtle, but important, distinction is that within the Matrix, how teachers notice becomes far more focused on becoming specific in their response, instead of

reporting generally on what happens, it centres on using isolated notable events, drawing these out and using these as the focus of the problematising.

For example, Donna, in her pre-intervention interview, when discussing the range of comprehension abilities and what makes someone a 'good' or 'poor' comprehender responded as follows:

> That's tricky because I had a reader two years ago who was clearly supported really well at home. Her mum was a speech and language therapist. At home she clearly had that cultural background, and she was a super reader, but she struggled to understand what she was reading so when she came through she had flown through loads of books but couldn't understand. So, a lot of the questions she was being asked, she just didn't have it, so she went back to reading some books again that she already done [sic] which did not go down well at home, but when I talked to mum, she actually understood that. I also have one child in the class who was a particularly poor reader but actually was a super comprehender and he sat and listened to other groups of children and could answer the questions much better than the children who were. What was it that she came from a background that loved reading and this little boy didn't, and yet had the understanding that she doesn't. I don't know the answer to that so that was a long quick answer to say I don't know, oh god.

The coded extract can be found in Appendix number 9. When applied onto the LTNF (Van Es, 2011) this response was categorised at a Level 2 as it scored highly on the criteria for what teachers notice by examining individuals' experiences and comparing and contrasting these. It also hit aspects of Level 3, Focused Noticing, as Donna was able to highlight noteworthy events and begin to refer to specific

examples of evidence. However, in analysing this statement, I could not round this statement up as the specificity she gained from looking at pupils' experiences did not translate into any meaningful reflection, action or forward thinking. When applied onto the Matrix, this response was Specific-Surface response, the second lowest quadrant. This accounts for the differences, with a focus on pupils' experiences being specific, detailed, where some problematising taking place based on her reflections, contrasted with the depth of the response which is evidently more limited and surface level. There is a lack of evidence of Donna proposing solutions or empowering herself to shape the outcome of what she observed. The interpretation is limited and there is no shaping of what she noticed; the depth of the response is therefore limited. In this way, the Matrix charting the depth helps to more accurately place this response as Specific for pupils' experiences but limited in applying this information to experiment, adapt and inform her teaching, negating the shaping at the heart of Noticing.

The findings within this intervention demonstrate that how teachers notice is problematic as there were occasions when a general impression of an event showed a level of depth, criticality and problematising, which would be considered a high degree of Noticing; however, this response failed to be recognised as such in the Van Es framework due to a lack of specificity. As Noticing becomes more specific, the teachers in the present intervention were able to consider pupils' experiences, make connections between that and teaching and learning and use what they had learned to inform future teaching, demonstrating the three components of Noticing: attending, interpreting, and shaping (Van Es & Sherin, 2021).

6.3.1.2 The Subtlety in What Teachers Notice

What teachers notice is an aspect that both frameworks have in common, though charting *what* teachers notice looks subtly different across them. The criteria in this aspect of Noticing can result in responses failing to receive the recognition they deserve. Within the LTNF, the value is placed upon responses that shift from focusing on the whole-class "attend to the whole-class environment" (Level 1) to focusing on individuals experiences "attend to particular students' mathematic thinking" (Level 3). Within the Matrix, there is recognition that high-level Noticing involves a combination of being able to look at the 'bigger picture' at a whole-class level (fully General) and moving to focus on pupils' experiences (partially Specific). Crucially, the highest level of Noticing within this aspect involves being able to see the quality of zooming in on individuals' experiences and connecting them to build back up to a whole-class view using this information. This difference in defining what teachers notice, I argue, more effectively supports the crucial component in Noticing: shaping (Van Es & Sherin, 2021) as it supports teachers to build and deepen their understanding of children's experiences individually and collectively to inform future decisions (Aukerman, & Aiello, 2023). Take the following example from Allison in her first diary entry:

> This practice generated a lot of opportunity for pupils to discuss their texts which I think was really valuable for some pupils, particularly those who lack confidence. I know these pupils lack confidence and I noticed that these pupils were a lot more vocal within these groups. They spoke more openly about their opinions on what they liked and how it linked to them, a lot more than they normally would in their guided sessions, probably because they weren't as aware of me listening in or being there to guide their answers. I

think for my less able readers they really felt more part of the discussion as they were all doing the same thing and I think if I developed this further, they would become increasingly confident sharing their responses. I think all pupils coped really well with this approach and it did make me think that my question-answer approach within the guided session was hampering their ability to openly share, discuss and justify what they think. I also think the group approach wasn't building that whole-class view of reading culture as it was only within groupings; we never really explored comprehension on a whole-class level like that.

The coded extract found in Appendix number 10. This response was categorised at Level 3, Focused Noticing, because it focuses specifically on pupils' experiences, the impact on the class generally and also on the less able readers. This was not categorised at Level 4, Extended Noticing, (the highest level) because it did not link individuals' or groups' thinking to wider principles of pedagogy and practice. Yet these elements, I propose, are about how Allison noticed. The Matrix places this response at the highest category for what teachers notice in that it is fully specific. Here, Allison demonstrated the ability to zoom in and out of the 'bigger picture' and also recognised the individual experiences of pupils and groups within her Noticing. This response accurately captures both criteria for this aspect within the MTN: "the perspective shifts from that of an outsider looking over the whole lesson, to that of a zoom lens focus" as well as "They are able to zoom in and out effectively within their reflections to provide a balanced perspective of the wider experience and also that of significant individuals and groups within" (Van Es, 2011, p. 109). In this way, subtly developing the emphasis of what teachers notice helps the Matrix to include

more of the interconnectedness of how teachers notice the experience of individuals and the collective combined.

6.3.2 Challenge 2: Mapping Teachers' Changes

Another problem when digging deeper into both frameworks is the overall level of change that both frameworks show for each participating teacher. The LTNF illustrations show a very high level of intervention impact on each teacher from pre- to post-interview across the Four Levels. The impact of the experience when reflected on the Matrix remains very positive overall, but the LTNF does show less variation and higher impact due to fewer variables.

Within the LTNF, the results from pre- and post-implementation of the CLPL learning show a high-impact result. There is a reduction in the number of Level 1, Baseline Noticing, responses from the first to second interviews, as well as a rise in the number of Level 3, Focused responses. Also, the joint highest post-intervention responses were categorised at Level 4, the highest level of Noticing, in contrast to there being no Level 4, Extended responses, recorded at the first interview stage. The number of Level 2, Mixed responses, reduced slightly. This is shown in Figure 21.

Pre-Intervention	Post-Intervention
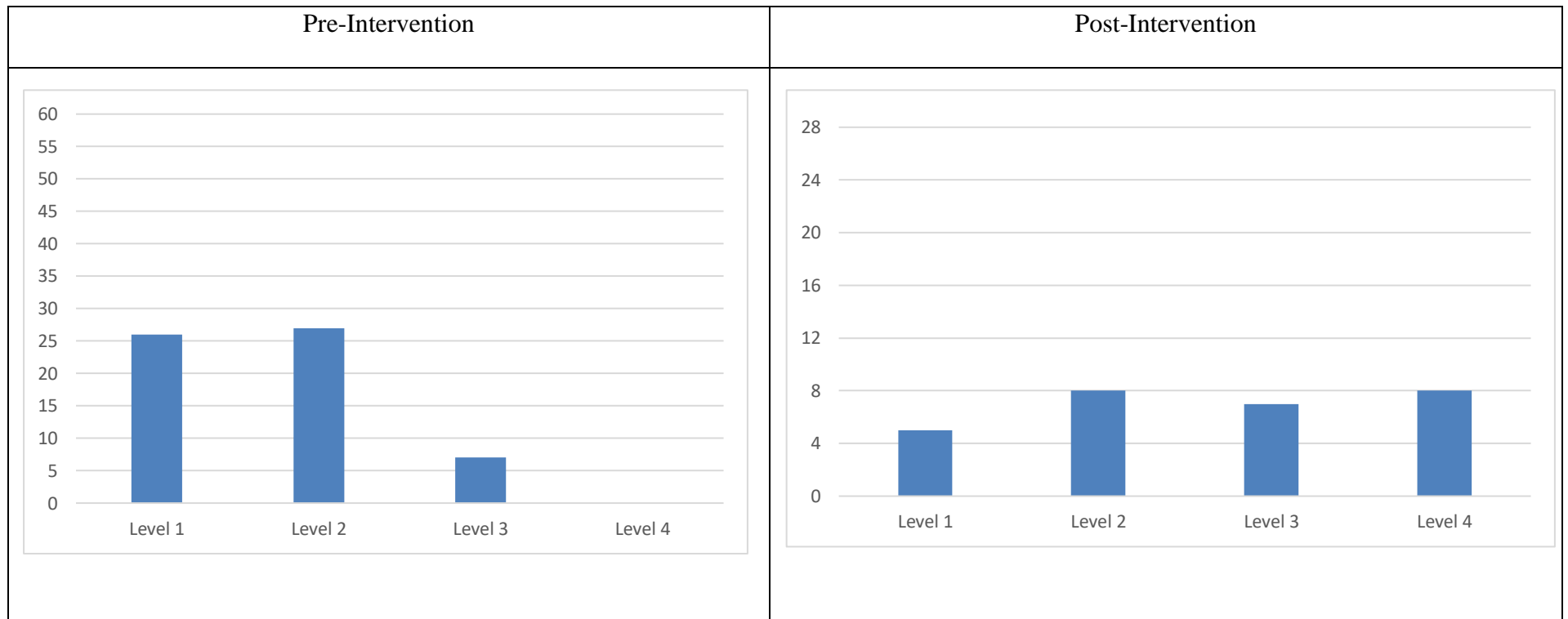
Figure 21 - Example of Cara's Pre- and Post-Intervention data on the LTNF
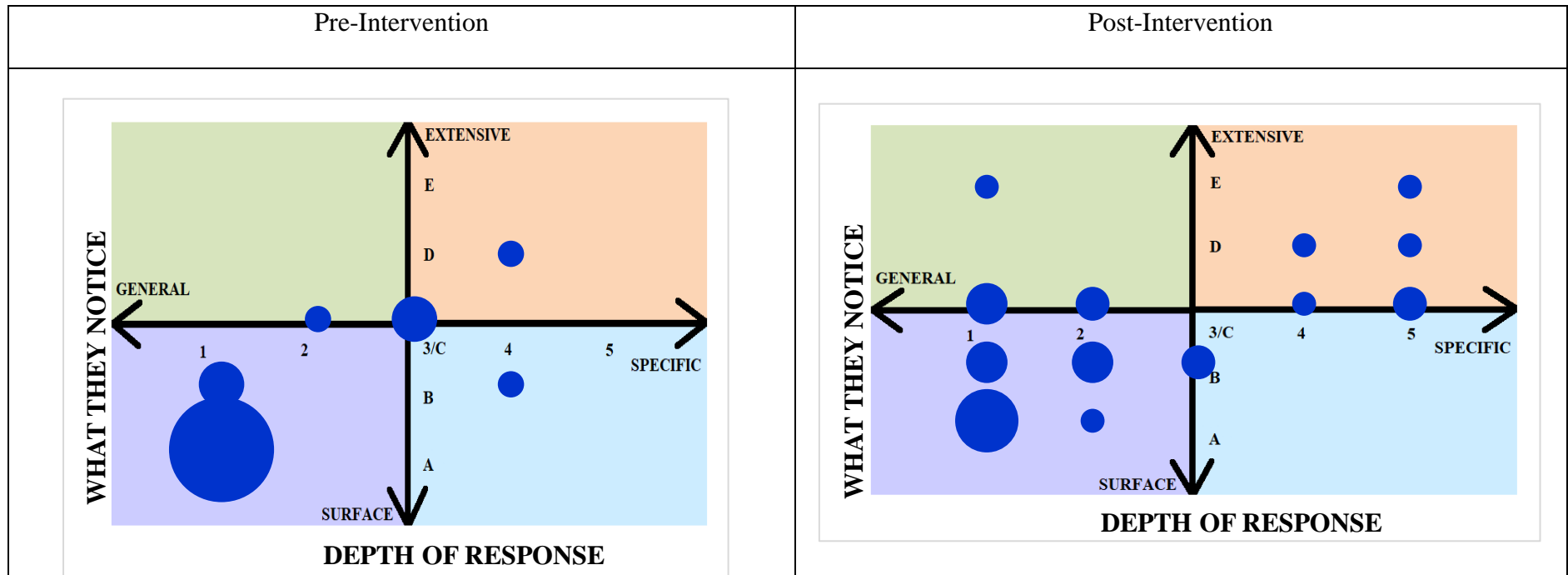
Figure 22 - Example of Cara's Pre- and Post-Intervention data on the MTN

The results, shown on Figure 22, within the Matrix pre- and post-intervention are still positive but are more varied. There is a high number of responses categorised within the lowest quadrant of General-Surface Noticing at the post-intervention stage, although there has been a greater shift upwards and outwards, meaning that the overall number of fully General and fully Specific responses reduced. There is also evidence of some mid-point Noticing within the pre-intervention data, with a few outliers within the Specific-Surface and General-Extensive quadrants, the second and also highest quadrants within the Matrix. It is positive to see such an increased prevalence of responses within the Specific-Extensive quadrant at the post-intervention stage, showing improvements from the pre-intervention data. There is more spread within the quadrant, with only a couple of examples at the most extended levels of both aspects. There are more that are highly Specific and only mid or partially Extensive. There are also a few responses that sit within the second highest quadrant, General-Extensive Noticing, with most being at the midway point for what is noticed and only a couple of instances that are Extensive. The above example demonstrates that each teacher's experience was positive and impactful, with the Matrix presenting a more varied outcome than the LTNF. It is worth exploring why this may be the case as this could be misconstrued as a negative outcome of the intervention, that I would counter.

It could be suggested that the visual representations of both frameworks show that the results were more impactful across Four Levels than four quadrants; however, I argue that this is not the case. It could simply be the case of formatting. Take the example of Cara's pre- and post-intervention data provided above, the Four Levels within the LTNF graphs are easy to read and understand, making impact more visually simplistic. This can be contrasted with the more complex Matrix where two

aspects are charted across four quadrants, so this visual takes more effort to navigate and understand, meaning that impact could be more complicated to 'see' at first glance.

Another explanation is that the intervention is shown to be less impactful on the Matrix than on the LTNF. Indeed, it could simply be that by representing the data on the Matrix, the three teachers' Noticing was very positive, but to a lesser extent than when represented on the LTNF. I propose that rather than this being a negative outcome, it is that the Matrix has the capacity to represent responses more accurately. This means that when responses are in the highest two quadrants, they have met more stringent criteria across both aspects, in some ways making the results more detailed. The Matrix also shows the subtleties at play within the four quadrants, where responses are, for example, only partially Specific, which provides more detail when shifts have taken place. To illustrate this point, Allison's responses are valuable. Within the post-intervention interview, she had a few Extensive-Specific responses, but had a very high number of General-Extensive responses, a huge shift from the pre-intervention data which had a high number of General-Surface responses, as seen in Figure 23.
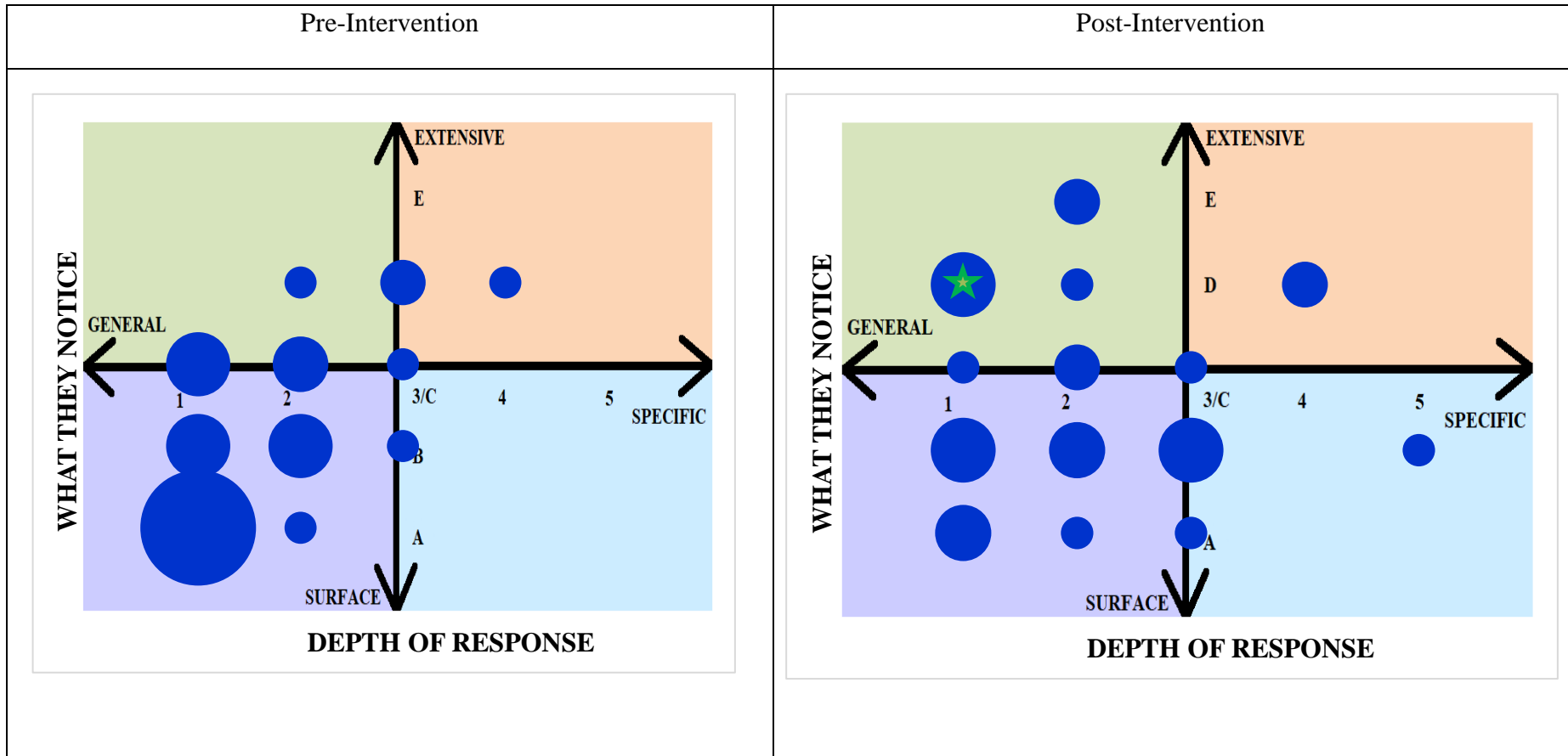
Figure 23 - Example of Allison's Pre- and Post-Intervention data on the MTN

Drilling down, consider the following response, outlined with a green star on each framework:

> What I did really like about this experience is that you reflected on both the teaching and the learning at each lesson, so it never got boring enough to be ineffective and pupil learning was always the focus even from the first lesson. So, it wasn't an afterthought after you had spent time planning a full scheme of work; it kept it relevant and responsive. I liked that balance and I think without a way of supporting teachers to work through that it can be hard to get that balance. (Allison)

Within the MTN, this response was categorised as General-Extensive. It is fully general as there is a lack of focus beyond pupils' experiences without drilling down to isolate groups or individuals' experiences and using these to inform her thinking. However, it is Extensive because it shows a partially extended response where Allison applied a level of criticality to reviewing her practice, considering the link between teaching and learning. She explored the impact of decision making on herself and her pupils, both of which fulfil the criteria of this aspect.

When applied onto the LTNF, there is limited capacity to display the differences between what and how Allison noticed. The response was categorised as seen by the green star in Figure 24.

Pre-Intervention	Post-Intervention
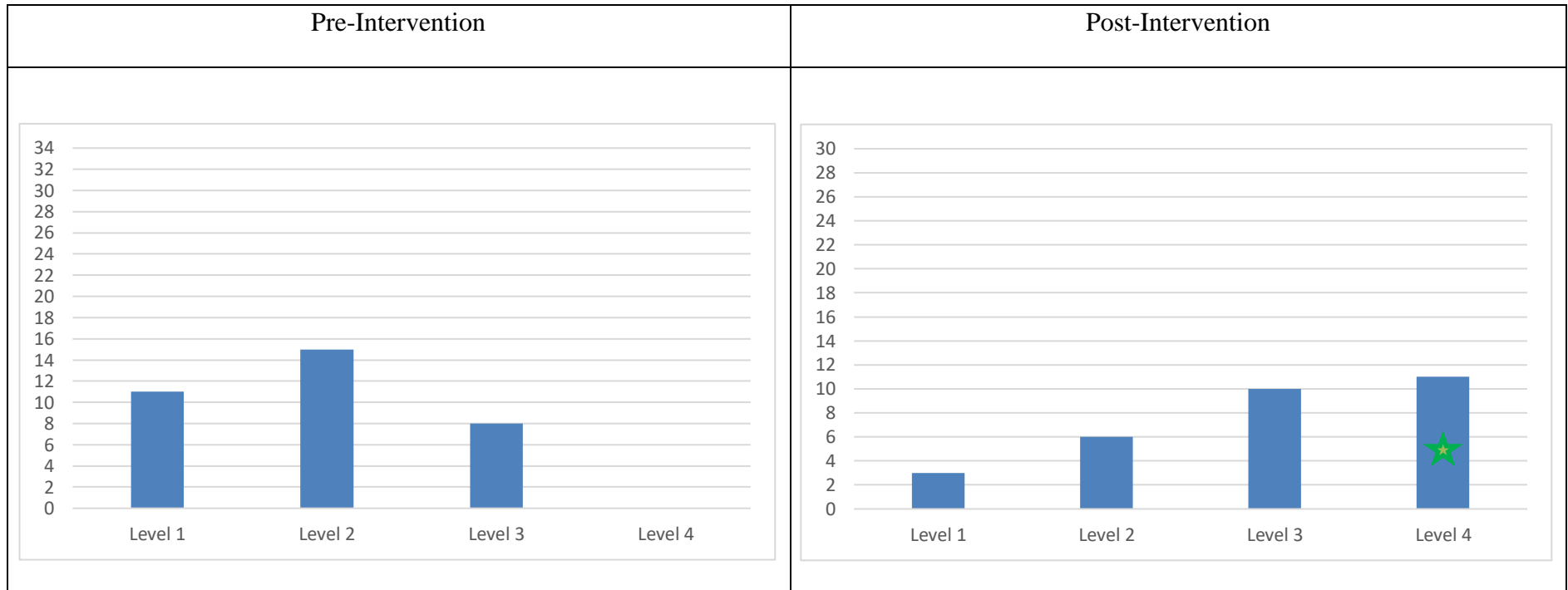
Figure 24 - Example of Allison's Pre- and Post-Intervention data on the LTNF

This response is placed within Level 4, Extended Noticing, the highest level. It is placed here as, overall, the response satisfies the criteria of how teachers notice by highlighting a noteworthy event, using this as evidence and making connections between teaching and learning. However, it did not fully satisfy what teachers notice as it fails to focus on pupils in any level of specificity. It is because the LTNF has too few categories that are wide-ranging and require a high level of interpretation. It is in this way that the LTNF has a limited capacity to show subtle shifts.

6.3.3 Challenge 3: Mapping Unique Experiences

Within the LTNF, Donna and Cara's experiences are very similar in terms of their responses and where the shifts took place. The results show a stepped increase for all teachers, to a greater or lesser extent, in the overall responses from pre to post data sets. The Matrix presents a more varied account of each teacher's experience, with the Matrix being more unique to each teacher.

I would argue that the MTN presents a more varied representation for each teacher because it is more tailored to their experience, more accurate to what they noticed and the depth of the responses they provided. As there are increased categorisation options available for both aspects of Noticing, it is clearer to see where teachers sit within their Noticing abilities before and after their CLPL sessions. I propose that the Matrix helps to highlight the individuality of teacher learning, catering far more for each teacher's unique shifts and developments throughout the experience whilst still providing a common framework to which their Noticing can be plotted. The pre- and post-intervention data is represented within. See the pre- and post-intervention Matrix in Figure 25, followed by LTNF representation from Donna's experience in Figure 26.

| Pre-Intervention | Post-Intervention |
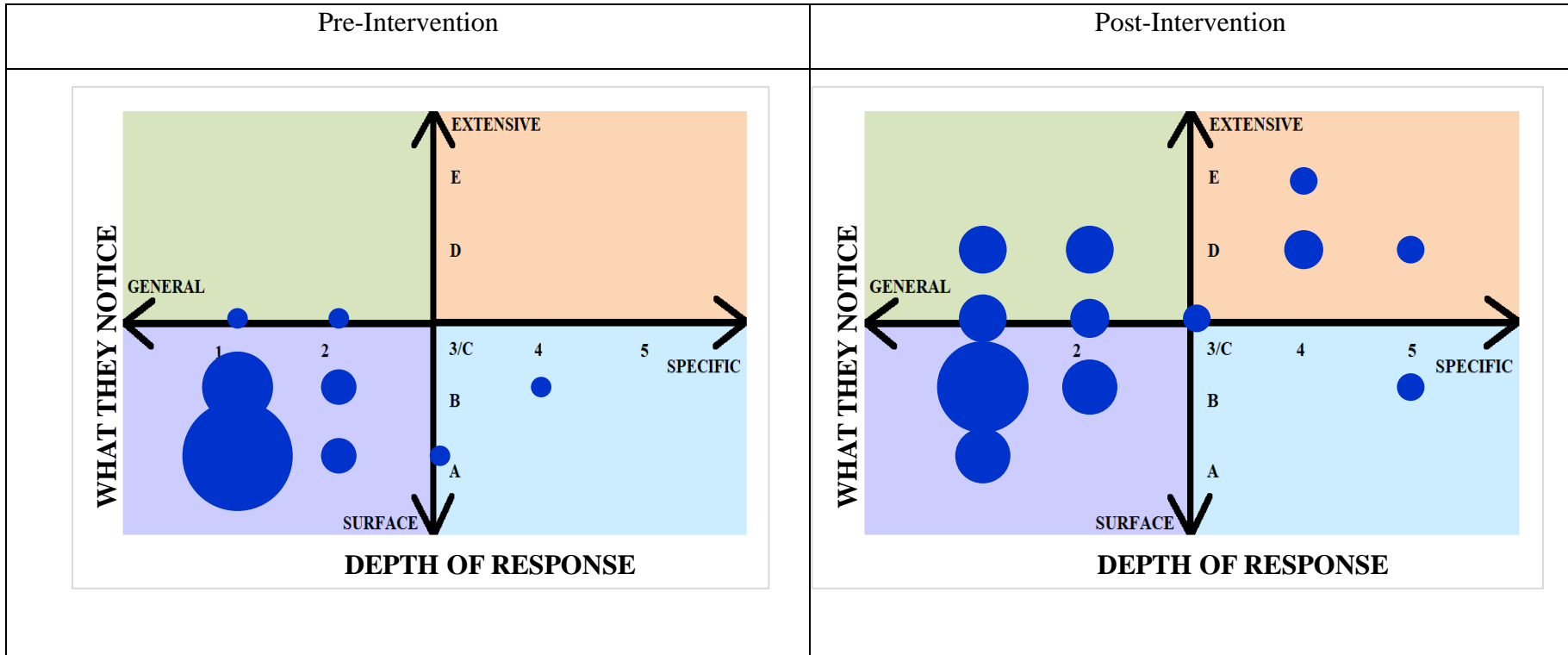
Figure 25 - Example of Donna's Pre- and Post-Intervention data on the MTN

218

Pre-Intervention	Post-Intervention
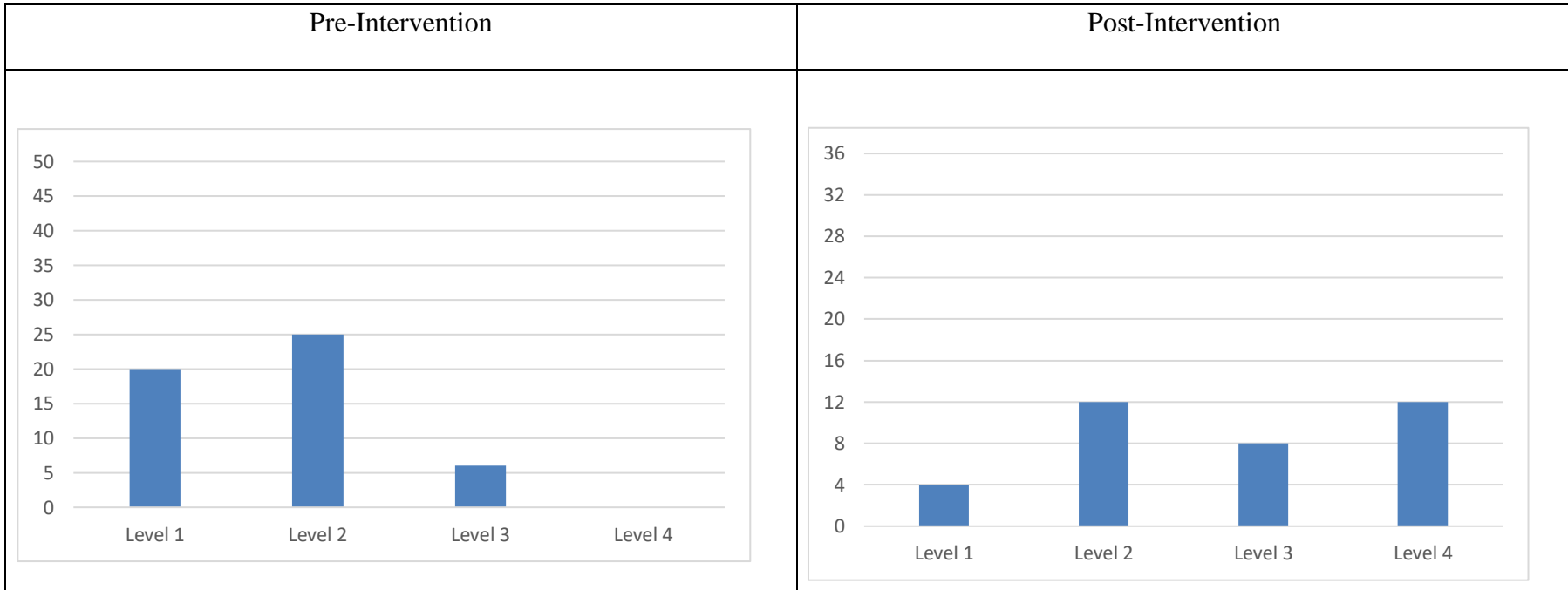
Figure 26 - Example of Donna's Pre- and Post-Intervention data on the LTNF

As can be seen in Cara and Allison's representations in the previous section, it is evident that the Matrix results are more varied and unique to each teacher. The LTNF has fewer options and categories and so experiences mirror each other, specifically for Donna and Cara. This, I argue, is not fully representative of their experiences, for while there are key themes across each teacher's experience, there are subtleties that are not the same across both of their experiences. Take the following examples from pre-intervention interviews for both teachers.

> So, to me a good comprehender has that in-built love of reading. They have a good level of reading ability and, therefore, can enjoy the text and follow its meaning. I think some comes from home and some comes from their ability as our more able pupils tend to have stronger comprehension skills. They tend to be in a much better place to learn and so can run with what you teach them and take it all in. They are able to start and go with you. A good comprehender you can see through their pictures, through their writing, through their daily conversation, that a lot of input has been put into them from home or from outside. Going to the other extreme, they are not talking properly yet and they are saying things that don't make any sense; one word that works at home for mum as she knows it, but to us it doesn't make any sense at all and they are struggling; 'cos they are not getting that input they are struggling at school. (Cara)

And the following:

> Yeah, just as before, for some pupils it is so clear that is comes naturally to them and they can pick up the inference behind and the meaning of what is behind. It's all about getting people at home to talk about everything too;

whether it's about what they are having for their dinner or what they are watching on television or what they are reading at night-time. You know, all of that. And if children don't have that then they are not bringing anything to their reading and therefore find it difficult to infer what other children are just picking up daily without the need for input. It is very tricky for someone who doesn't have that background. How to do we provide that? (Donna)

These statements from Cara and Donna respectively would show alignment on the LTNF in that the key theme at the heart of this response hits at a similar point. Both teachers comment on aspects such as home-school experiences, early learning experiences and background knowledge; therefore, they are both plotted within Level 2, Mixed Noticing. When plotted onto the Matrix, however, their unique perspectives plot at two different categorisations. Cara's response is categorised within the Surface-Specific quadrant. Donna's response is categorised within the Surface-Midpoint. Shown as green stars in Figures 27 and 28. While both are in alignment in terms of what is noticed, they are both categorised differently within the depth of response provided. Cara is categorised as partially Specific within this aspect whereas Donna is categorised as the mid-point between general and specific. This is because Cara unpacks more about what these differences are for different groups of pupils; there is more specificity within her response when compared with Donna's that hints at these differences but does not define these pupils in sufficient detail.
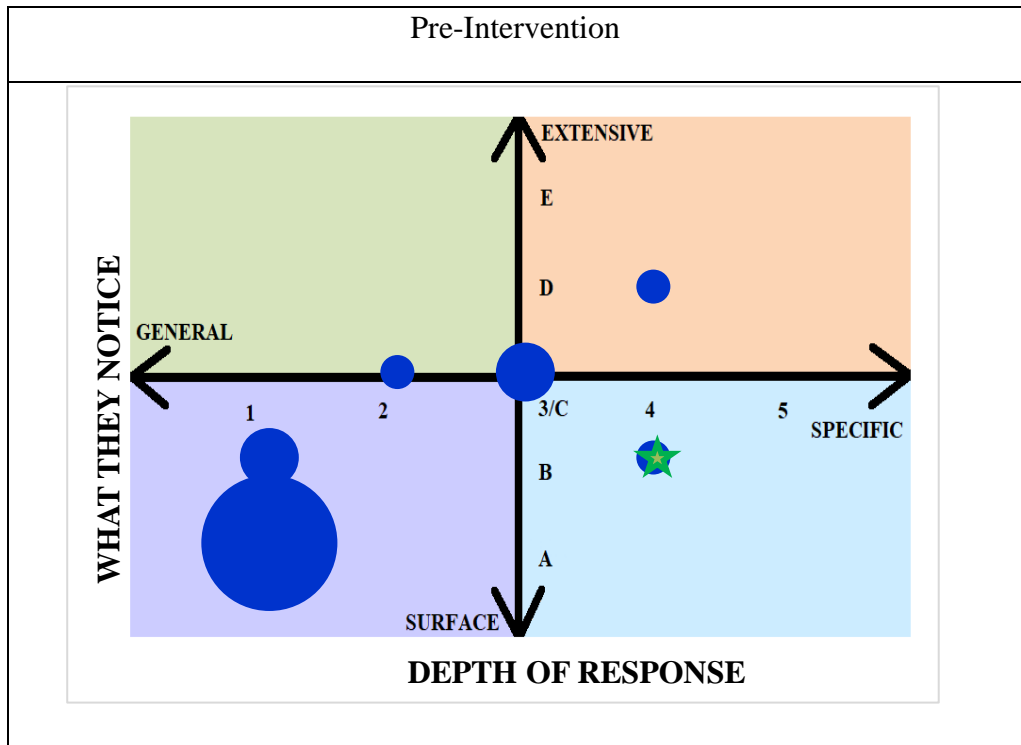
Figure 27- Example of Cara's data within the Specific-Surface Quadrant of the MTN
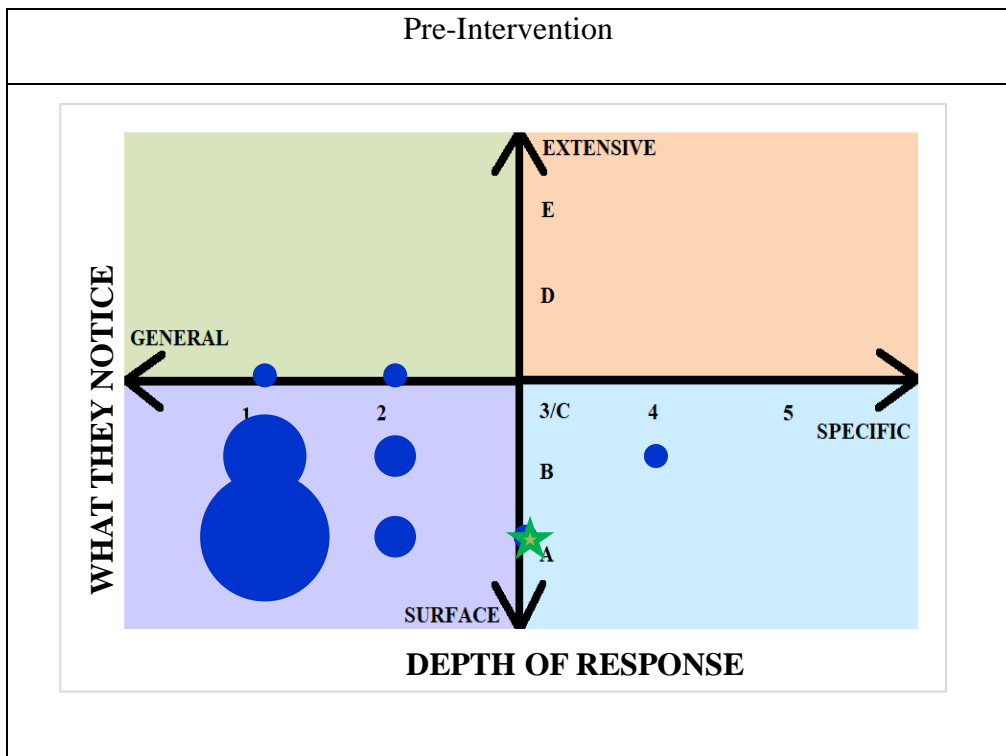
Figure 28 - Example of Donna's data within the Specific-Surface Quadrant of the MTN

In this way, the LTNF does not match the abilities of the Matrix to demonstrate these subtle differences which, when compiled over a series of data sets and responses, lead to different conclusions. These examples show that the Van Es' Levels framework tends to favour categorising the general nature of a statement, whereas the increased category options allowed by the Matrix do this in greater detail and provide a more accurate representation as a result.

This finding is supported within the literature that suggests homogeneity is not possible when exploring the experiences of individuals (Ford & McMahon, 2019); the Matrix represents each teacher's experiences as unique. This does not mean, however, that shifts were not evident; rather, each teacher experienced shifts within their knowledge, understanding and values in relation to teaching and learning. As Eun (2011) found, the same CLPL activity would have a different effect on teachers based on their individual backgrounds, history and development needs. Each teacher had a unique start and end point within the study and the Matrix was helpful in evidencing what the literature says about the individuality of learning.

6.4 What Can the Findings Tell Us About Teacher Noticing?

Much has been learned and explored within the interpretation of the results. In the simplest sense, Teacher Noticing is indeed a complex phenomenon, difficult to understand and challenging to isolate. The findings of this intervention support previous evidence, dating back to the foundation for Teacher Noticing itself, while some aspects of existing frameworks and thinking in the field. Combining the narrative accounts with the data displayed on each framework presents a powerful representation of how each teacher noticed, particularly over time. This shows that teachers increasingly made sense of the complexities of classroom life to become

more skilled at Noticing and using the associated information – key features of Noticing in action (Jacobs et al., 2010). The Noticing representations show that the skills of attending, interpreting, and shaping (Van Es & Sherin, 2021)

While the overall data from both frameworks presents a positive picture of the teachers' growth in Noticing, it is important to acknowledge that the Matrix helps with the problematisation of the most commonly used framework to represent Teacher Noticing (the LTNF) (Van Es, 2011). The Matrix more accurately illustrates the teachers' experiences as well as offering insight into what is important in Teacher Noticing in terms of what typifies the highest Noticing responses, thus offering consideration for how this could be used beyond this study.

6.5 What High-Level Noticing Looks Like?

The Matrix also helps us to understand more of what is taking place when teachers demonstrate a high degree of Noticing. A point worth unpacking is that there is a high number of Level 4, Extended Noticing, responses recorded at the post-CLPL stage across all three teachers. This is not translated to the same extent within the MTN because there are far fewer Specific-Extensive Noticing responses across the three teachers' experiences at the post-intervention stage (the highest within the Matrix). Within the MTN, some of the most extended responses were generated within the General-Extensive quadrant (the second highest), not always within the Specific-Extensive quadrant which is not what I expected. I expected more 'Specific' responses because there are a high number of Level 4 responses within the LTNF, the highest level within that framework, that I expected the same would be true within the MTN. In the most simplistic sense, this could mean that with the increased

specificity of the criteria and increased categories there are simply fewer responses that were categorised at the 'highest level' of Noticing within the Matrix.

Furthermore, I no longer hold that the Matrix is necessarily about getting to the 'highest' singular quadrant, like the LTNF, but is, instead, about progressing towards being more Extensive in how teachers respond to what they observe. This quality is arguably more important than whether the response is related to an individual pupil, a group, or the class as a whole. I came to consider that responses being Extensive in a Specific sense is not necessarily 'better' than something being Extensive generally, as shaping does not need to be focused on individuals or groups to take place. I now propose that the crucial part in Noticing is the depth of the response because within this aspect, at the aim is that teachers can problematise, think critically, analyse, use evidence, and form conclusions on pedagogical decisions within the subject area and beyond, answering the 'so what?' of responses. In this way, the shaping component of Noticing can be captured and understood through looking at the depth of teacher Noticing; for example, take Cara's post-intervention response:

> It always felt there wasn't really time for those kinds of lessons, for good chats about books, for pupils to see themselves as readers, but to me being part of this has helped me prioritise what we want our early years literacy to look like and have the permission to do so. All of the practices which I have tried have become part of our routine. We have a reader response session whole class every week, which the children love and, instead of our floor book being for 'Thinking Reader', it's a journal of the pupils' artwork and even a few words of how they respond to the texts we read. The reciprocal approach is also something which I feel the pupils are really benefiting from. They all seem to actually understand, even at such an early level, that these

225

skills help them build a picture of what that story means to them. I've been blown away with what they can do. It's been incredibly positive in this respect. I think the biggest shift has been from me; in shifting that perspective that comprehension is something which you interpret, it's not fixed and it's not about whether they understand it the way I do. It changed from being a 'get the right answer' exercise to actually talking to children about what that text meant to them. That is something I have never thought about, and I don't think many other teachers have either; yet it's changed my whole approach. The connections they have made has [*sic*] been amazing and this has had a really positive impact on their awareness of the world around it – the Cultural Capital, building that knowledge. They have come on so much. (Cara)

This response is very limited in terms of what is noticed, it is very general, focusing on pupils' experiences on the bigger picture, without providing a closer look at individuals or groups and using this to strengthen this aspect of Noticing. What is present, however, is the highest depth of a response, where Cara demonstrated a fully Extensive perspective. She used what she has noticed, reflected upon and problematised it, considering wider pedagogical choices which then shaped on next steps. She discussed the 'so what?' of her observations, with evidence of digging deeper and grappling with the big questions within teaching and learning. In this way she demonstrated the core qualities of shaping, seeking, as Aukerman and Aiello (2023) suggest, "to deepen their understanding of the child as they engage in ongoing interaction with that student" (p. 10).

This investigation identifies that one of the key components of high-level Noticing is the depth with which teachers demonstrate their learning, the extent to which they

critically reflect, problematise and use this information to inform their thinking, values, and behaviour. This work put all of these components together. I found that the importance of being able to notice generally, of the class as a whole, or specifically focusing on an individual or group is not as much of an indicator of how extensive a teacher's Noticing abilities are. In sum, what is needed is an accurate framework to illuminate teacher learning via Noticing, and the MTN appears to offer this.

7 Conclusion and Recommendations

This chapter explores the implications of the investigation. I also discuss the intervention's limitations and my recommendations and conclude by summarising the outcomes to answer the research question at the heart of this thesis.

7.1 What are the Implications?

What has been learned within this study is of significance to the field of Teacher Noticing, both supporting the key theoretical underpinnings and challenging the application of the dominant LTNF from Van Es (2011). The findings within this thesis support the literature that Teacher Noticing is a promising field for representing and understanding teachers as learners (Wei et al., 2023).

The limitations of the LTNF (Van Es, 2011) were explored within this thesis. Previously, studies have concluded that there are limitations to this framework (Scheiner, 2016) but they have not yet demonstrated this by representing teacher Noticing on an alternative framework, which I have developed.

The MTN contributes a new framework to the field in relation to how Teacher Noticing is represented, building upon previous research that recognises the constraints of the dominant LTNF (Van Es, 2011). The results show that the Matrix provides a more robust and accurate representation of each teacher's Noticing abilities within this investigation. The Matrix refreshes and increases the categories, definitions, and categorisation options for responses, offering greater structure yet flexibility when categorising teachers' responses. The investigation also demonstrates the potential of the Matrix to represent teachers' experiences by charting what they notice and, crucially, the depth of their responses. Through

charting both aspects separately on the Matrix, the results are more accurate than charting what and how teachers notice within one combined level, a hallmark of the LTNF (Van Es, 2011). In doing so, it helps to illuminate the 'black box' of Teacher Noticing (Scheiner, 2016), suggesting that, in fact, the depth of teacher responses is the significant factor in isolating the shaping component of Noticing. This component was found to be fundamental in responses where teachers displayed the highest levels of Noticing and paves the way for further exploration into the Noticing components themselves, specifically with the introduction of this third, important component, shaping (Van Es & Sherin, 2021).

The LTNF focuses on increased Noticing abilities (of what is noticed), focusing on teachers' abilities to increasingly focus and tailor their responses to the experience of individuals and small groups of learners. In contrast, the Matrix, demonstrates that there is significant value in teachers being able to zoom in and out of the classroom picture, generating their reflections from both the individual and collective experiences of pupils. This has led to an interesting conclusion, that reflections that are general are not necessarily 'better' than those that are specific; rather, both can support teachers to think about the influence and relationship between teaching and learning, and learning and teaching, in ways that help them to gain new insights both as a teacher and as a learner themselves. This is a new contribution to the field of Teacher Noticing. It shows where a new emphasis lies and that extended responses do not have to be specifically more 'zoomed in' to either individuals or groups; high level Noticing can take place at a birds-eye view too.

There are also some practical implications of the results of this intervention for policy makers, local authorities, schools, and universities which are outlined below:

7.1.1.1 For Policy Makers

At the highest level in Scottish education, there has been a strengthened focus on the updated Professional Standards (GTCS, 2021), which refreshes the commitment for all teachers to uphold the principles of "lifelong learning, reflection, enquiry, leadership of learning and collaborative practice as key aspects of their professionalism" (GTCS, 2021, p. 5). This signifies a focus on teachers as learners from the highest level; however, the Standards (GTCS, 2021) do not indicate how teachers and school leaders might be supported to enact this. There are further conversations to be had around what this looks like and I propose that the MTN could support the practical translation of this theoretical aim into practice.

7.1.1.2 For Local Authority Education Services

Moreover, there is evidence to suggest that due to the strengths of the findings within this investigation, the MTN could be a valuable tool that senior leaders in Education Services use to support school leaders to redesign the school improvement process. Local authorities could make use of the Matrix within their professional learning programmes to provide schools with a tool to help them explore teacher learning and represent teachers' experiences within their school improvement priorities. Use of the Matrix could add powerful, qualitative evidence to support the impact of teacher learning before it would be evidenced in attainment results. Indeed, it removes the accountability that teachers face when children's attainment results are aligned with their practice alone. It may also support school leaders to promote and raise the

profile of teachers as learners in a more individualised, relevant and context-specific way that values teachers with their own strengths, experiences and perspectives.

7.1.1.3 For Use in Schools

Headteachers have a key role in setting the tone for what is valued and promoted within a school. The emphasis they place on the importance and approach to teacher learning is fundamental to how teachers themselves value and prioritise their own learning. Ensuring improvement plans are carefully considered in relation to how teacher learning is supported, facilitated and measured within the wider work of the school is vitally important. Headteachers could use the Matrix to engage with teachers in a relevant, context-specific, and impactful way. The narrative accounts show the impact of engaging teachers can be far greater than predicted. There is a parallel between teacher and pupil learning within this intervention as the results show that in all cases, the teachers realised their pupils were capable of far more than they had expected. If this same principle is applied, then teachers and school leaders could have far more ambitious aims for themselves and for the power of individual teachers delivering change within their own classrooms, based on more nuanced Noticing of pupil needs.

7.1.1.4 For Universities

As found within the literature, Teacher Noticing has been a promising line of inquiry within teacher education in recent decades, meaning that there is a sound rationale for using Teacher Noticing as a way of support inquiring, reflective and critical teachers who are confident in their ability to attend, infer and shape pupils' experiences within the classroom. What this intervention has brought is a new model for how to represent this learning. University staff could apply the Matrix within

their own work in supporting student teacher learning on placement. This would provide valuable data on how this supports the application of the Matrix within the very setting from which it originated. Also, for student teachers, the Matrix could help support their conversations about their own learning, with university staff and their placement coordinator in school. This gives a way of informing discussions that could help teachers to recognise the components and how these are developed within their practice. The prompt questions within this intervention would also help to support such reflective discussions.

7.2 What are the Limitations of the Results?

The most significant limitation within this intervention is the lack of an observational measure. Within this intervention no classroom visits, observations or recordings were made while the intervention was taking place; teachers' lessons were not observed by me or by any members of the leadership teams within the teachers' schools. This meant that it was not possible to confirm that what the teachers said had changed and was reflected in their practice. Where, for example, teachers discussed the impact on pupils, where they shared how pupils' engagement had increased, there was no way of substantiating that this was actually taking place within the classroom. While there were methodological reasons behind this decision, the result is that using the outcomes of this intervention to reflect wider improvements in pupils' experiences is limited. On the other hand, Kersting et al. (2016) found that undertaking observations of Teacher Noticing still does not mean that the teachers make the advances researchers observe, resulting in researchers making judgements without connecting to the individual's thoughts, valuable information needed to make a judgement.

Another aspect within this intervention that would have enhanced it further would have been to explore the impact of the intervention on teachers beyond the initial time period of the intervention. It has been shown within systematic reviews that many interventions capture data on Teacher Noticing on either a one-off event or over a very short time frame (Amador et al., 2021). This study could be considered longer than most for its duration; however, it would be interesting to see if the impact was sustained over a longer period of time, and if not, what factors influenced this. This would provide insight into the long-term support required for teachers to notice at increasingly higher levels, and also, the role that supported CLPL plays in supporting these improvements. I do, however, recognise that there is a severe lack of longitudinal qualitative studies in teacher learning generally as this is difficult to achieve practically (Amador et al., 2021). This is especially important when considering how high-level Noticing focuses on the needs, experiences, and backgrounds of individual cohorts for informing pedagogical approaches. Charting this over multiple cohorts would be both challenging and illuminating.

7.3 What Next?

Next steps include expanded exploration of Matrix use. It would also be beneficial to explore the Matrix application within other subject areas. This intervention took place within reading comprehension. The LTNF was developed within the field of mathematics and so it would be interesting to apply the Matrix within a Mathematical learning experience to see how well it translated and any issues that could limit the Matrix to a subject-specific framework. This would be insightful because mathematics, generally, as a subject has a 'right' answer and a finite number of methods for calculations, and so the same dimensions such as Cultural Capital

may look different when translated into another core subject area. The findings may propel further research considerations.

An aspect that could have enhanced the intervention design – and a possible next project – would be leveraging the potential of collaboration in supporting teacher learning. This features heavily within the literature as an effective tool for learning but was not included within the research design (Cochran-Smith & Lytle, 2009; Cole, 2012; GTCS, 2021; Stoll et al., 2012). While there were methodological reasons behind this decision making, such as protecting anonymity, I think the collaborative dimension could have enhanced the implementation because within teachers' responses, they each reflected on the natural shareability of what they were doing and how they talked to colleagues about what they had noticed in terms of pupil ability and engagement, with one teacher reporting that colleagues had commented on the differences within the class as a whole. Two of the teachers said that colleagues had asked about the practices they were doing as they wanted to do them too. Being able to harness this within the intervention design could have further supported the teachers as learners and strengthened the intervention overall. A project involving collaboration would be a possible next step for research in this area.

An interesting next step would be to explore the Matrix as a self-reflective tool to support Teacher Noticing. The findings within this intervention present promising evidence for the Matrix being a relevant and practical tool for individual teachers themselves and so having them chart their own Noticing could add further rich data to explore.

I would also welcome further comment and discussion around the Noticing components devised, and recently revised, by Van Es and Sherin (2021) which are: attending, interpreting, and shaping. The findings from applying the Matrix indicate that shaping is the crucial factor within Noticing, beyond simply attending to interpreting classroom events. Exploring how the components develop, interplay, and build would help us to understand more about what high-level Noticing looks like and the Matrix provides a framework on which this can be illustrated.

7.4 Endnote

At the heart of this thesis lies one key research question: To what extent can the Matrix for Teacher Noticing represent the Noticing of primary teachers?

The findings from this investigation, as presented through the accounts of three teachers, show that Teacher Noticing is an effective vehicle for representing teachers as learners. The accounts help to demonstrate how each teacher developed their Noticing abilities using the core components of Noticing: attending, interpreting, and shaping (Van Es & Sherin, 2021). All teachers within this investigation developed their Noticing abilities and the impact was clear within the narrative accounts.

The findings within the investigation present a positive picture for future research in the field of Teacher Noticing. The Matrix provides an arguably more accurate representation of the impact of teachers' learning than that offered by Van Es and demonstrates how the teachers developed their Noticing ability during the teacher learning experience when contrasted with the LTNF (Van Es, 2011) confirming that there were indeed grounds for a new framework and that the Matrix has presented a promising next step in the development of the field.

The findings suggest that the new MTN offers a more accurate, multidimensional representation of Teachers' Noticing. Further, it enables an illustration of teachers as creative and critical thinkers, aware of their own learning. When adopted, it may go some way to illuminating the 'black box' of teacher learning with a view to enhancing practice and, ultimately, pupil learning.

7.5 My Own Learning

My own experiences within education, both as a student-turned-researcher and a teacher-turned-leader presented me with the chance to learn more about the views, perspectives and values and practices of teachers in schools. Within my academic and professional life, I have faced many moments that were disappointing, disheartening and concerning in relation to teachers' responses, whether that be to curriculum development, learning improvement or nurturing approaches in schools. These same emotions came to the fore during the transcription of the accounts of the teachers within this intervention. I sadly realised that many teachers feel powerless, unaccountable and lack the confidence, knowledge and skills to make informed pedagogical decisions based on what learners need. I think this is something that I often took for granted.

As a Headteacher, I realise how little time and resources we afford to the individual learning experiences of teachers, in favour of a 'catch all' approach to help us achieve improvements rapidly and at scale, all under the genuine motivation to provide pupils with the best experiences we can. I realise that whilst I aim for the teachers with whom I work to be critical, experimental, reflective and engaged in what they do and why, I never really placed an emphasis on how I challenged this

and used this to support teacher learning and pupil experiences. It was not systematic and there was no framework to support it.

I have also found, over the course of my investigation, that national aims and agendas can create conflict between the balance of individual learning paths and static targets. To school leaders and teachers this can seem like an impossible balance to strike; therefore, it seems understandable that due to a lack of time and capacity, the wider national aims become the focus. The outcomes of this intervention are what gives me hope. Through undertaking this intervention and reflecting on the impact and outcomes, I learned that the MTN provides a valuable tool to illuminate Teacher Noticing. So, rather than feeling dejected, I conclude the investigation with a sense of optimism and promise. I also realise in the opportunities Headteachers have in supporting teachers' 'learning to learn'. I simply would not have experienced this insight had I not been in the unique position the investigation offered me as a researcher and school leader. The process has had an unintended impact on myself as a leader and a researcher. When I consider how the Matrix could reflect my own learning, I believe I have come from a place of very General, surface-level of understanding to someone far more aware of my role, stance, perspective, and what this means for those who approach my research. Taking forward my own recommendation for future research, I used the Matrix as a tool to chart my own reflections of where I felt I began within my research and how I felt my own Noticing had developed as an academic during this process. The results are demonstrated in Figures 29 and 30 respectively.
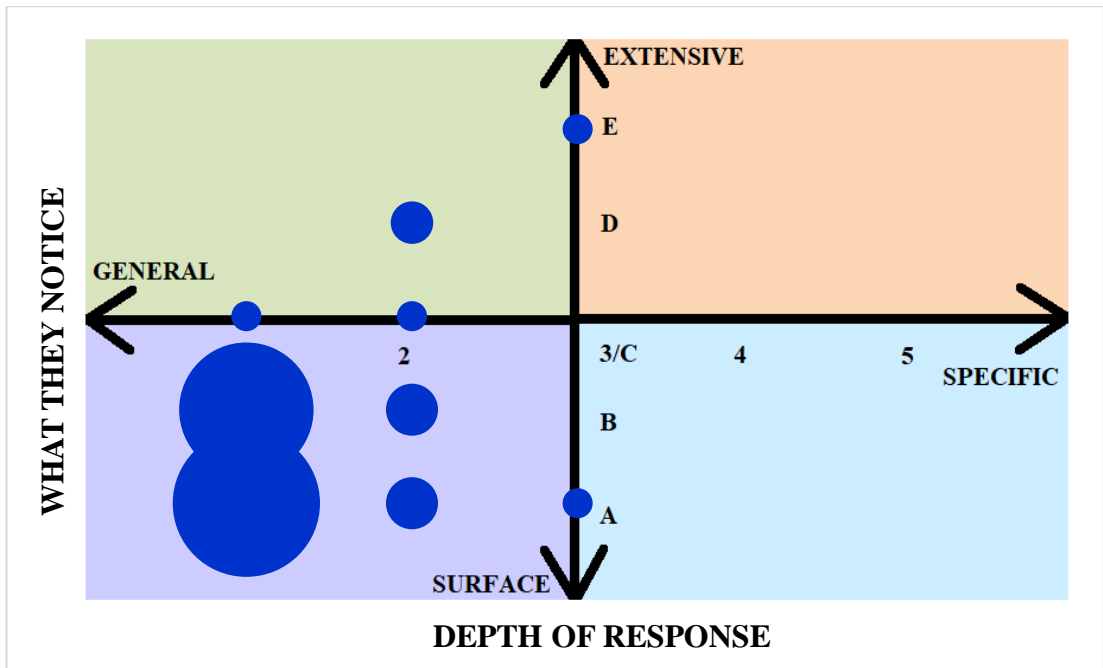
Figure 29 - My Pre-EdD Matrix
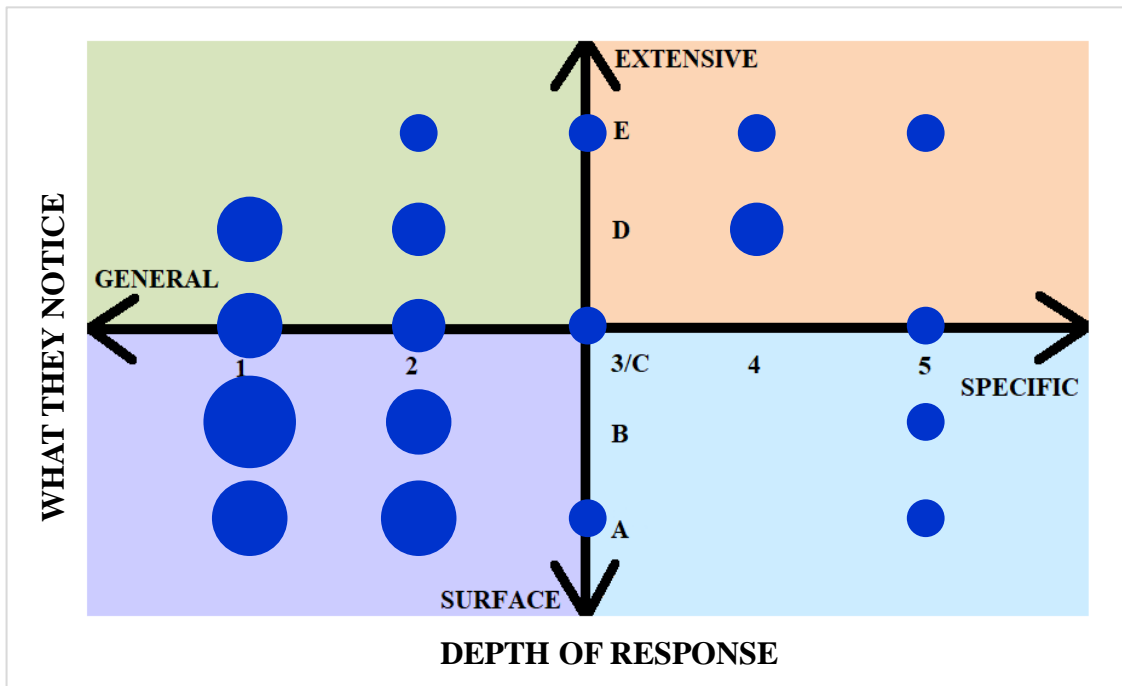
Figure 30 - My Post-EdD Matrix

In summary, through this thesis, I too have engaged in a valuable and impactful learning experience. It has been personal, shared with others and informed by knowledge and theory from supervisors, researchers, and previous work, mirroring the experiences of those who took part in my intervention. Because of this learning process, I can conclude that I have become a far more critical, creative, and dynamic academic as a result and for this, as for Cara, Donna and Allison, I am grateful and proud.

Appendix 1

Email Advertisement

Exciting Opportunity for class teachers engaging in the **Equitable Literacy Programme** for the forthcoming school session!

Dear colleagues,

I am contacting you regarding an opportunity for class teachers to participate in a piece of doctoral research relating to teachers' understanding of effective comprehension teaching through the implementation of specific practices within the Equitable Literacy Programme.

As a member of the Improving Outcomes team, I am committed to supporting effective teaching and learning across XXXX. One of the projects I am heavily involved with is supporting the implementation of the Strathclyde University Equitable literacy Programme led by professor XXXX. I am particularly passionate about literacy and teacher professional development and am currently undertaking a doctorate in this area.

I am looking for class teacher participants to engage in a piece of targeted research. I am looking for 3 primary class teachers, across all 'Cohort 2' schools, and therefore places will be on a first-come, first-served basis.

The commitment required of class teachers involves undertaking a semi-structured interview at the start and end of the next school year, as well as 3 digital video diary entries as 3 specific practices are implemented within their own classroom.

There are no set requirements based on length of teacher experience, nor a particular year-group or stage focus, teacher gender or school location. The only criteria for engagement are that: participant class teachers will need to be full-time primary class teachers with full GTC registration; employed within XXXX Council and working in a Cohort 2 school for the forthcoming session.

The opportunity to actively engage and inform practitioner development, and contribute to the academic sphere, highlighting the work taking place in XXXX, is something which I'm sure will be welcomed and embraced by many.

I aim to meet with the 3 class teachers who express interest in becoming a participant to explain more about the process, allow them to ask any questions about this investigation and for them to give consent to engage. I have provisionally set aside the week of Monday 20th August for this to take place.

Therefore, I would initially ask for any class teacher wishing to engage to contact me to express interest via email, by Thursday 16th August at 4pm.

As places are given on a first-come, first-served basis, a list of reserves may be generated for use in the event any of the original participants do not sign consent. If

you have a place on the reserves list, you will be notified of this via email on Friday 17th August.

Looking forward to meeting the future participants,

Kindest regards,

Miss Emma Ritchie

Appendix 2

Evidence-Informed Practices within Reading Comprehension

Practice One: Developing Reader Response through 'The Three Sharings'

(Chambers, 1991)

Rosenblatt (1938) was a key player in developing Reader Response Theory, promoting the need for a personal response to text, where reading is a 'transaction' between the person and the text. Iser (1978) added that the meaning was not located within the text, rather it is co-created between reader and text. The combination of information from the text with the reader's own knowledge and experience results in each individual forming their own unique meaning (Pearson & Cervetti, 2017). In this view, the process blends "self and text" (Catts, 2009, p. 179) and deeper levels of understanding are elicited from more personal connections to text (Damico et al., 2009).

Designed by Chambers (1993), 'The Three Sharings' is an approach to supporting pupil engagement in high-quality comprehension discussion based on personal engagement with text (Luke et al., 2011). It provides a framework under the theory of 'Tell me', to facilitate meaningful response-based class or group level discussion, which, according to Freebody et al. (1991), are key to moving away from cognitive to affective experiences of reading. The '3 Sharings' focuses on understanding the reader's experience by promoting genuine engagement with text (Chambers, 1991). This approach promotes positive reader identity as pupils' thoughts and opinions about texts are to the fore (Dombey, 2015). The discussion follows three basic responses, sharing Enthusiasms, Puzzles and Connections (Chambers, 2011). The structure of the discussion is thought to advance pupils' individual and collective

understanding of a text. The approach is designed to be less like an interrogation and more of a collaboration, with '*how*' being used frequently to extend pupils' views, as opposed to 'why' as a way of encouraging responses (Chambers, 2011).

Practice Two: Utilising Cultural Capital through 'Everybody Reading in Class' (Quigley, 2016)

The importance of recognising, valuing, and utilising Cultural Capital is considered by many as a fundamental shift in promoting equity and allowing all pupils to have the opportunity to succeed (Thomson & Hall, 2022). It is defined by Bourdieu (1984) as "The cultural knowledge that serves as currency that helps us navigate culture and alters our experiences and the opportunities available to us" (p. 67). Olsson and Land (2007) suggest that differences in achievement may in fact stem from a failure to address the differences in home and school life as opposed to ability. To ensure all pupils have an equal chance to learn successfully, teachers need to 'level the playing field' (Langer-Osuna, 2017) and provide a 'bridge' between home and school literacies (Lareau, 2011; Moll & Cammarota, 2010). Moll et al. (1992) use the term 'Funds of Knowledge' to describe the knowledge and skills developed within specific households and cultures which children bring to school. Van Tonder et al. (2019) report that pupils who come from a disadvantaged background have less of the valued capital than peers. Failing to address this can significantly impact on pupils' engagement and attitude to school literacy activities (Ellis & Smith, 2017).

Everybody Reading in Class is as a way of providing a short, daily opportunity for ren to share a love of reading together (Quigley, 2016). Generally, classes take dedicated time for children to read, listen to, and share texts together. A key element

is that there are no prescribed texts nor reading schemes; rather, children have choice in what they read, with whom, and where, promoting a positive reading culture. The encouragement of children coming together helps to build the capital through pupils' shared experiences with text as "conversation is a critical part of learning how to make meaning and how to make sense out of the world in which we live" (Ketch, 2005, p. 10). The role of dialogue in successful teaching is recognised across all areas of practice, and comprehension is no different (Haworth, 2001). Almasi and Russell (1999) found that the collaboration in dialogue behind reading comprehension activities creates a 'shared floor' in which new meanings and understandings can be developed through the interactions with others. Most interestingly, they found that this culture can be sustained by pupils themselves when no longer supported by the teacher. Through discussion, participants can interrogate and reform their own understanding, refining it through the interactions with others, to the benefit of others and their own understanding (Almasi, 2002). When pupils work together, they are able to give and share different perspectives which encourages them to think differently about texts (Rafael & McMahon, 1994; Wells, 1990) and offers new perspectives to be considered. Through this interaction, meaning is enhanced as it is combined with what we know and what we learn from others (Parker & Hurry, 2007).

Practice Three: Strategy Instruction through 'Reciprocal Reading' (Palinscar & Brown, 1984).

Strategy Instruction is among the highest recommended approaches for improving reading comprehension (Ellman & Compton, 2017), with specific benefits reported for struggling readers (Gersten et al., 2001). Explicit teaching of strategies was found to be an effective way of instruction (Coiro & Dobler, 2007; Graves & Liang, 2008;

Pressley, 2000) to "make the invisible, visible" (Stebick & Dain, 2007, p. 11). The main aim of strategy instruction is to provide pupils with useful strategies to help them understand texts and monitor their own understanding (Elleman & Oslund, 2019). It creates agency on the part of the reader, to employ strategies to monitor and support their understanding. Yeomans-Maldonado (2017) found that increasing the ability to monitor one's understanding increases reading comprehension. Pearson and Cervetti (2017) found that these gains can also be transferable to new texts.

Among the most common approaches to strategy instruction is Reciprocal Reading which was developed from landmark studies by Palinscar and Brown (1982). The strategies used are: Summarising, Questioning, Clarifying and Predicting (Palinscar & Brown, 1982). The explicit teaching of these strategies was selected as research had shown that these strategies were used by good, but not by struggling readers (Palinscar & Brown, 1982). The reciprocal approach supports scaffolded learning, whereby through a period of teacher modelling and supporting, the teacher gradually gives more and more responsibility to the pupils for their learning (McLaughlin, 2012). This, when combined with explicit teaching is a successful combination, particularly for the most vulnerable (Routman, 2003). The strategies are explained and modelled as well as practised and applied, with increasing responsibility being given to the learners (Duffy et al., 1987).

Appendix 3

Semi-Structured Interview Questions

Semi-Structured Interview Questions
Theme 1: Teacher's Background
❑ 'We are going to begin with me asking you the following initial questions'   ❑ What stage are you teaching this school year?   ❑ How long have you taught that stage?   ❑ How long have you been a primary class teacher?   ❑ Could you tell me about your memories and experiences on comprehension teaching from initial training, CPD, reading, scheme/cross stage work in school?   ❑ Have you ever attended a CPD course or in-house staff development on comprehension teaching?   ❑ Is this a type of CPD offered by your local authority or any previous authorities you have worked in?   ❑ Have you ever undertaken any professional reading or research on comprehension teaching?   ❑ Do you feel this would be welcomed? If so, why/why not?
Theme 2: Perspectives on Comprehension Teaching
❑ 'Now I'm going to ask you to think about comprehension teaching specifically'   ❑ Can you describe some of the comprehension activities that your class undertake regularly? PROMPT: What's important about each of these activities/elements? Are there any that are more important than others? Are there any elements that you think are missing or underplayed in your current curriculum?   ❑ What is the range of comprehension in your class? Can you give me an example of a 'good' comprehender? PROMPT: What makes them good? Why is that/ how did they develop that?

- ❑ What about a 'poor' comprehender. PROMPT: Can you give me an example? What makes them poor? Why?

- ❑ What makes comprehension teaching difficult for the stage you teach? PROMPT: Why do you think that?

- ❑ If you had to pass on three key messages from university, colleagues, professional development courses to others, what would they be? PROMPT: Where did you learn this?

- ❑ Do you feel that your current practices provide your pupils with the core skills to access texts and comprehend what they are reading? Please explain your answer.

- ❑ Do you think there are other ways of teaching comprehension, and if so, why?

- ❑ Have you tried any of these methods in the past? If so, were they more/less effective than your current practice, and in what ways?

Theme 3: Teacher Reflection

- ❑ 'We are now going to talk about teacher reflection'

- ❑ Have your views on comprehension teaching changes over the course of your career?

- ❑ PROMPT: Are they the same now as when you first trained? In what ways are they similar/ different? What caused that change in understanding/ How did it come about?

- ❑ Have you had any training or guidance on undertaking reflection?

- ❑ If so, who delivered this training and at what stage of your career were you?

- ❑ Do you think a model for reflection be helpful to teaching staff? If so, why/why not?

Theme 4: HLP for Comprehension Teaching

- ❑ 'We are now going to talk about the 3 HLP's in this investigation'

- ❑ Looking at the 3 HLPs I've selected, how do you feel they would fit into comprehension teaching?

- ❑ What things would each be good for teaching? What might be missing?

- ❑ Are there any particular pupils who you think might benefit most/least from particular HLP's? Who and why?

- ❑ 'Do you have any other thoughts or comments about any of the themes discussed?'

- ❑ 'Thank you for taking part in this semi-structured interview'

Appendix 4

Digital Diary Prompt Questions

Digital Diary Prompt Questions
TELL ME ABOUT HOW YOU USED THE PRACTICE IN THIS LESSON ❑ What were you wanting to teach about comprehension? ❑ Was this something new for you? For the pupils? What could it offer your pupils? ❑ Talk about the practice – what are the significant ideas and what potential does it offer? ❑ Are there any worries or concerns? ❑ How did you think pupils would respond? ❑ How confident did you feel about using this practice, and why?
TALK YOURSELF THROUGH THE LESSON ❑ Describe some key, note-worthy movements, comments or observations made by yourself or your pupils. ❑ Did anything surprise you during the lesson? ❑ What questions occurred about comprehension learning and teaching as a result of the lesson? ❑ What could you have done differently, and why would this have been more/less effective, for which pupils? ❑ What advice could you give another teacher about this?
EXPLAIN ANY QUESTIONS OR THOUGHTS AS A RESULT OF DOING THE LESSON ❑ What did you notice about the response of the class? Did this surprise you, why? ❑ Talk about any particular pupil's response (good or bad)? Did this surprise you, why? ❑ How well did this lesson promote equity amongst learners, and why? ❑ What did you think about the practice and comprehension?

WHAT DOES ALL THIS MEAN TO YOU?

❑ In what ways is this practice GOOD FOR developing your pupils' comprehension? Why?

❑ In what ways is this practice NOT PARTICULARLY GOOD FOR developing your pupils' comprehension? Why?

❑ What advice would you give about the practice?

❑ What advice would you give about comprehension teaching?

❑ What is the next bit of teaching where you could you use this practice? Why would it be good for that?

Appendix 5

Example extract taken from Participant 2 from the MTN

Participant 2 Practice 2		
Lesson 1	What they Notice (X-Axis)	Depth of Response (Y-Axis)
This is participant 2 and I am discussing and reporting back on high-leverage practice 3 using reciprocal reading. This is lesson 1. I have to report on this particular practice and I just wanted to say that I followed Emma's guidance and I again found this a very interesting practice to undertake. Again, great text recommendations, high interests texts to use – hooked them in and engaged them throughout the 3 lesson process.	1	A
I just wanted to say that they most definitely enjoyed the new roles that were described to them. They are very much at the beginning of this journey as p2 however I am convinced that they have learned a great deal, just from the 3 lessons and I certainly propose they take this further and hope that the teacher who has them next session will do so and develop their comprehension skill and strategies this way.	1	A
I did split the whole class into 4 groups of mixed ability and focused in on 1 ability group although all undertook the practice and as I say I focused in on 1. I em for the questioning role, I urged those individual, I kind of paired them up as well so they weren't really working on their own within each group. I encouraged them to bring over the 3 Sharings framework.	1	A

Figure A5-1: The responses categorised across five aspects within each axis.

Participant 2 Practice 2 Conversion			
X	Y		
1	1	5	
1	2	2	
1	3	0	
1	4	1	
1	5	0	
2	1	0	
2	2	0	
2	3	0	
2	4	0	
2	5	0	
3	1	0	
3	2	0	
3	3	0	
3	4	0	
3	5	0	
4	1	0	
4	2	0	
4	3	0	
4	4	0	
4	5	0	
5	1	0	
5	2	0	
5	3	0	
5	4	0	
5	5	0	
3	3	16	

Figure A5-2: The conversion to numerical values for both axes to plot onto the MTN

Participant 2

Practice 2 Lesson 1
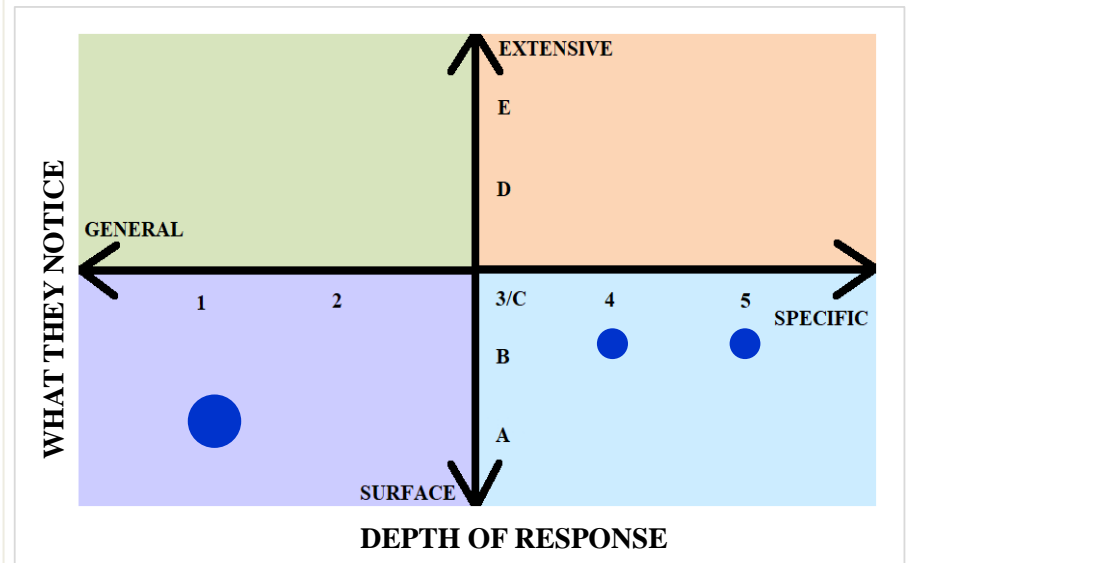
Figure A5-3: The data plotted onto the MTN

Appendix 6

Example extract taken from Participant 2 from the LTNF

	Level 1	**Level 2**	**Level 3**	**Level 4**
	Baseline	*Mixed*	*Focused*	*Extended*
What Teachers Notice	Attend to whole class environment, behaviour, and learning and to teacher pedagogy	Primarily attend to teacher pedagogy Begin to attend to particular students' mathematical thinking and behaviours	Attend to particular students' mathematical thinking	Attend to the relationship between particular students' mathematical thinking and between teaching strategies and student mathematical thinking
How Teachers Notice	Form general impressions of what occurred Provide descriptive and evaluative comments Provide little or no evidence to support analysis	Form general impressions and highlight noteworthy events Provide primarily evaluative with some interpretive comments Begin to refer to specific events and interactions as evidence	Highlight noteworthy events Provide interpretive comments Refer to specific events and interactions as evidence Elaborate on events and interactions	Highlight noteworthy events Provide interpretive comments Refer to specific events and interactions as evidence Make connections between events and principles of teaching and learning On the basis of interpretations, propose alternative pedagogical solutions

Figure A6-1: The criteria for the LTNF

Participant 2

High Leverage Practice 2 – Lesson 1

Learning about Student's Cultural, Religious, Family, Intellectual and Personal Experiences and Resources for use in Instruction.

_____

This is participant 2 and I am dealing with the high-leverage practice number 2 which is in relation to learning about students cultural and background and the micro-practice is ERIC time. So I have now taught the 3 lessons in accordance with the paperwork and em lesson 1 was em I selected a story actually the story that I was used was recommended by yourself…

I'm just continuing from my earlier recording and just to say I spent time reading this text and spent time asking questions about the text which is our usual way now that is our practice. I used the 3 Sharings to try to engage the children and they are very much engaged with this approach and the varied questions em that these em offer. Although I have had em a number of questions prepared I've had to add to these now, I've got a bigger bank of these now which cover all the 3 Sharings so really its to give them as many opportunity as possible to answer these to become more familiar with and confident with using these to help their comprehension of the text they read.

So, I was em able to select a pupil who is usually very much typically disengaged from this type of activity, em let's call him MC. Very much looking to distract others. However, I have noticed that during the 3 Sharings activity he has become much more engaged than normal. So, this is obviously something that he is very interested

Figure A6-2: The responses categorised across the Four Levels of Noticing

Figure A6-3: the data plotted onto the LT

Appendix 7

Figure A7-1: Colour-Coded response within the LTNF

Figure A7-2: Categorised response within the MTN

Appendix 8

R: Have you noticed any impact on the pupils doing certain activities as part of it, in relation to their engagement or enjoyment?

P: The culture one really opened my eyes up. I thought I knew the children, but I actually homed into more of them. The first lesson was a book I chose, the second lesson was when I honed into that one specific child and this little one wouldn't engage at all but because it was a book that had been read many times over at home and I read to the whole class he sat, listened and answered. And he knew so much about it, he had that subject knowledge, I had found that hook for him. It changed everything for me. So, the very next day, lesson 3, I made sure it was another book of his choice, but not one he brought in, and it was exactly the same – high quality engagement in Literacy. I couldn't believe it. I have never been able to get him just to sit and it made such a difference. He now has 5 books about countries and places in the library area and he loves getting a chance to read these each day. He's actually now got another pupil engaged in these who was also a non-reader.

R: What is the range of comprehension in your class? It is still probably very wide, have you thought about how it could be easier to level out the background children have in comprehension by being able to tune into individuals.

P: Definitely now, now that I have done it. I have actually got a chart drawn up with what the children like, I can group them with their similarities, and this has helped me look at resource buying so that it meets what my pupils are interested in. During ERIC now the pupils are starting to network too. Some

Figure A8-1: Colour-Coded response within the LTNF

	A	What they Notice (X-Axis)	Depth of Response (Y-Axis)	D
1	reading.			
20	R: Have you noticed any impact on the pupils doing certain activities as part of it, in relation to their engagement or			
21	P: The culture one really opened my eyes up. I thought I knew the children, but I actually homed into more of them. The first lesson was a book I chose, the second lesson was when I honed into that one specific child and this little one wouldn't engage at all but because it was a book that had been read many times over at home and I read to the whole class he sat, listened and answered. And he knew so much about it, he had that subject knowledge, I had found that hook for him. It changed everything for me. So, the very next day, lesson 3, I made sure it was another book of his choice, but not one he brought in, and it was exactly the same – high quality engagement in Literacy. I couldn't believe it. I have never been able to get him just to sit and it made such a difference. He now has 5 books about countries and places in the library area and he loves getting a chance to read these each day. He's actually now got another pupil engaged in these who was also a non-reader.	5	4	
22	R: What is the range of comprehension in your class? It is still probably very wide, have you thought about how it could be easier to level out the background children have in comprehension by being able to tune into individuals.			
	P: Definitely now, now that I have done it. I have actually got a chart drawn up with what the children like, I can group them with their similarities, and this has helped me look at resource buying so that it meets what my pupils are interested in. During ERIC now the pupils are starting to network too. Some children didn't know dinosaurs and fossils were all linked in some way. We have been able to discuss how X, Y and Z are all linked. It's building those connections with them to help			

< > ⋯ Practice 1 Practice 2 Practice 3 Post Interview +

Figure A8-2: Categorised response within the MTN

Appendix 9

don't have that then they are not bringing anything to their reading and therefore find it difficult to infer what other children are just picking up daily without the need for input. It is very tricky for someone who doesn't have that background how to do we provide that?

R: Do you think that is one of the main challenges then for comprehension teaching?

P: Yes, I think so.

R: What is the range of comprehension in your class? Can you give me an example of a 'good' comprehender? PROMPT: what makes them good? why is that/ how did they develop that?

P: That's tricky because I had a reader 2 years ago who was clearly supported really well at home, Mum was a speech and language therapist. At home she clearly had that background and she was a super reader, but she struggled to understand what she was reading so when she came through, she had flown through loads of books but couldn't understand. So, a lot of the questions she was being asked, she just didn't have it, so they went back and actually read some books again that she already done, which did not go down well at home. So, what makes her different from someone who is a maybe a struggling reader? But actually, if you listen, if I read to that individual they could pick up all the meaning. I also have one child in the class who was a particularly poor reader but actually was a super comprehender and he sat and listened to other groups of children and could answer the questions much better than the children who were. What was it that she came from a background that loved reading and this little boy didn't and yet had the understanding she doesn't. I don't know the answer to that so that was a long quick answer to say I don't know, oh god.

R: What about a 'poor' comprehender. PROMPT: Can you give me an example? What makes them poor? Why?

P: I think just as I've mentioned that before – I can pick out individuals over the years who are poor comprehenders but they don't always fit a pattern. It's a lack of really reading to understand, its barking at print, the lack of understanding that its so important to hold what you're reading in your head and use that information.

Figure A9-1: Colour-Coded response within the LTNF

Figure A9-2: Categorised response within the MTN

Appendix 10

Figure A10-1: Colour-Coded response within the LTNF

	A	B	C	D
1	Lesson 1	What they Notice (X-Axis)	Depth of Response (Y-Axis)	
3	me to focus on the discussion with pupils and looking at their responses as opposed to trying to co-ordinate all the groups.	1	2	
4	This practice generated a lot of opportunity for pupils to discuss their texts which I think was really valuable for some pupils, particularly those who lack confidence. I know these pupils lack confidence and I noticed that these pupils were a lot more vocal within these groups. They spoke more openly about their opinions on what they linked and how it linked to them, a lot more than they normally would in their guided sessions, probably because they weren't as aware of me listening in or be there to guide their answers. I think for my less able readers they really felt more part of the discussion as they were all doing the same thing and I think if I developed this further they would become increasingly confident sharing their responses. I think all pupils coped really well with this approach and it did make me think that my question-answer approach within the guided session was hampering their ability to openly share, discuss and justify what they think. I also think the group approach wasn't building that whole-class view of reading culture as it was only within groupings, we never really explored comprehension on a whole-class level like that. And I think that's one of the key benefits of this practice, it develops that identity within the class which all pupils have of equal value and it can really increase that motivation to read, that idea that it's not right or wrong, all opinions are valued and welcomed. That I feel has been missing from my current approach, so I think that new perspective on it has been really helpful.	5	5	
	The only sort of concern that I had with this approach was that			

< > | Pre Interview | **Practice 1** | Practice 2 | Practice 3 | Post Interview | +

Figure A10-2: Categorised response within the MTN

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