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Psychomotor skills in vocational education: an exploratory
study into their importance, description and possible
differentiation into levels of learning.

by
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A thesis presented in fulfilment of the requirements for the
degree of Doctor of Education

2010

Authenticity Declaration

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Acknowledgements

The author would like to thank and acknowledge the following who were of great help with the preparation of this thesis:

Dr June Mitchell, my supervisor.

Dr David Cornwell, my original supervisor.

Dr John Ensor, my Head of School.

Glasgow Metropolitan College, especially Willie McCurrach and Tommy Brunton.

Dr Nigel Scaife, Syllabus Director of the ABRSM, interviewee.

Kevin Barton, Curriculum Advisor, QCDA, interviewee.

Louise Murray, ARAD, interviewee.

Dedication

This thesis is dedicated to the memory of my parents,
Bob and Eleanor Kirkley,
who were supportive of the beginning and would have been very proud at the end

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List of Abbreviations

- ABRSM: Associated Board of the Royal Schools of Music.
- ASC: Association of Scottish Colleges.
- AVCE: Advanced Vocational Certificate of Education.
- BNurs: Bachelor of Nursing.
- BSc: Bachelor of Science.
- BTEC: Business and Technology Education Council.
- CBL: Case-Based Learning.
- CD: Compact Disc.
- CPT: Clinical Placement Tutors.
- DCSF: Department for Children, Schools and Families.
- DfES: Department for Education and Skills.
- DipHE: Diploma in Higher Education.
- DVD: Digital Video Disc.
- EdD: Doctor of Education.
- EU: European Union.
- FE: Further Education.
- GD: Graphic Design.
- GCSE: General Certificate of Secondary Education.
- HCIMA: Hotel and Catering International Management Association.
- HE: Higher Education.
- HEI: Higher Education Institution.
- HLST: Hospitality, Leisure, Sport and Tourism.
- HMI: Her Majesty's Inspector.
- HNC: Higher National Certificate.
- HND: Higher National Diploma.
- HNU: Higher National Unit.
- HPC: Health Professions Council.
- HTF: Hospitality Training Foundation.
- ICT: Information and Communication Technologies.
- ILO: Intended Learning Outcome.

IT: Information Technology.

LO: Learning Outcome.

LSRC: Learning and Skills Research Council.

NQF: National Qualifications Framework.

NMC: Nursing and Midwifery Council.

NTO: National Training Organisation.

NVQ: National Vocational Qualification.

ODP: Operating Department Practice.

OPS: Organisation of Practical Skills.

OSCE: Objective Structured Clinical Examination.

PBL: Problem-Based Learning.

RA: Royal Academy.

RAD: Royal Academy of Dance.

RBLC: Resource-Based Learning Centre.

RCN: Royal College of Nursing.

RCSLT: Royal College of Speech and Language Therapists.

QAA: Quality Assurance Agency.

QCA: Qualifications and Curriculum Authority.

QCDA: Qualifications and Curriculum Development Agency.

SCQF: Scottish Credit and Qualifications Framework.

SLT: Speech and Language Therapy.

SQA: Scottish Qualifications Authority.

SVQ: Scottish Vocational Qualification.

UCAS: Universities and Colleges Admissions Service.

UK: United Kingdom.

VET: Vocational Education and Training.

Data referencing: Documents

DD&PA; Dance, Drama and Performing Arts.

IR: Institutional Review.

QF: Qualifications Framework.

R: Review document.

SBS: Subject Benchmark Statement.

SOR: Subject Overview Report.

Data referencing: Video

NW1D1 (time ref): Novices Week 1 DVD 1(minutes: seconds)

NW1D2: Novices Week 1 DVD 2.

NW11D1: Novices Week 11 DVD 1.

NW11D2: Novices Week 11 DVD 2.

E1: Expert 1.

E2: Expert 2.

Data referencing: Interviews

ABRSM: Associated Board of the Royal Schools of Music: Question number.

E1: Expert 1.

E2: Expert 2.

QCDA: Qualifications and Curriculum Development Agency.

RAD: Royal Academy of Dance.

Abstract

This study examines the role of psychomotor skills in several subjects within vocational education, including how these skills are viewed by educational and quality bodies, government and in the literature. It is thought possible that in the move of many vocational subjects into higher education, the place of psychomotor skills may have been considered to be of lesser importance. The difficulty in describing and exemplifying different levels of psychomotor skill may also have led to these skills being marginalised in generic level descriptors. The research used a case study approach and included documentary analysis of a range of quality documents, video data of novices and experts in practical kitchen classes, and interviews with Expert Chefs, the QCDA and representatives from the ABRSM and the RAD. The research also explored possible criteria that could be used to describe and differentiate between levels of psychomotor skills, and how these might best be described or exemplified in learning outcomes. Approaches to the teaching, learning and assessment of psychomotor skills were also studied.

The research found that psychomotor skills were still deemed of importance in many professions, and that it is important that graduating students should have reached a level of competence in them. Three possible levels of psychomotor skill (Novice, Advanced Beginner and Expert) were described and differentiated, and several criteria that could be used in their description and differentiation were identified and found to be valid. Methods of describing and exemplifying levels of psychomotor skill were discussed, and exemplification by video or repertoire are thought to be possible solutions. The teaching and learning approaches studied produced some examples of good practice, and suggestions for possible meaningful assessment methods are proposed. This study should be of use to curriculum developers, teachers in vocational education, researchers in vocational education and training and those involved with qualification frameworks.

Chapter 1: Introduction to the study, background and context.

Introduction and Rationale

The seeds for this study were sown when the author was working as a National Development Officer on the Hospitality Framework for Higher Still. Developing the curriculum and later the assessments for this subject across a series of levels raised many issues and difficulties. Because of the vocational nature of the subject and the need to provide a multiplicity of entry and exit points to and from both industry and other educational provision it was imperative to include the practical psychomotor skills needed in the industry. However, when designing a series of units the requirement to differentiate these skills from level to level became apparent. Reference to the Scottish Credit and Qualifications Framework (SCQF) level descriptors (SCQF, 2001) was of little help due to the lack of reference to practical psychomotor skills contained within them. Additionally, the need to “prove” through assessment that a unit containing practical psychomotor skills was indeed at the appropriate level (e.g. Higher) meant that the author was under pressure to assess these skills by written evidence rather than practical evidence, so that the appropriate cognitive words used at the level could be employed to give evidence of learning at that level (Johnson, 2008; Stevenson, 2001). As the author and her colleagues knew this could significantly disadvantage some groups of learners who could indeed perform the tasks to a high standard but who might not perform so well in written assessment, this led to the exploration of how practical psychomotor skills might be distinguished between levels of learning and how these might best be described in level descriptors. Higher Still was meant to bring about parity of esteem between academic and vocational subjects but without recognition of the complexity of the psychomotor skills involved it was never possible to describe these in the appropriate terms and therefore until this work is undertaken parity of esteem cannot be truly achieved (Stevenson, 2001).

In addition, the author’s previous experience as a music student, and that of her son in his training as a professional dancer, had introduced her to the taxonomies of

psychomotor skills, not described as such but nevertheless evident, used by the examining bodies for ballet (The Royal Academy of Dance hereafter referred to as the RAD) and music (The Associated Board of the Royal Schools of Music, hereafter referred to as the ABRSM). These two frameworks had been in existence for many years and had both recently been accredited and assigned to levels in England by the Qualifications and Curriculum Authority (QCA) (QCA, 2004). If it was possible thus to align these very practical assessments to different levels, surely it could also be possible for other subjects containing practical assessments such as nursing and the author's own subject, hospitality? This led to the research which this thesis describes.

Aims of the Study

The aims of the research are therefore:

To investigate the place of psychomotor skills within vocational education curricula and how these are viewed by different bodies

To explore the criteria that might indicate a clear progression in psychomotor skills from one level of learning to the next

To explore ways in which such criteria might be made explicit through being described in learning outcomes: or, if not, of being codified by some other means

To consider the implications of the above for the teaching and assessment of psychomotor skills in vocational education

Given the restraints of time and the requirements of an EdD thesis, this thesis aims to provide "one small step" towards these research aims.

Before any secondary or primary research can be undertaken and described, it is first necessary to review the recent changes in education and their impact on vocational

subjects in particular. In this chapter, the emphasis will be on the development of quality frameworks and the influence of the Quality Assurance Agency (QAA). The influences from other government initiatives will be explored further in Chapter 2.

Recent influences on education, particularly vocational education

Within the last ten to fifteen years there have been several parallel drivers for change within education, and in particular within vocational education. The Dearing Report (Dearing, 1995) called for a review of qualifications available for 16-19 year olds in the UK. The area of focus for change included the quality of the qualifications and procedures to ensure that this quality was maintained; benchmarking of qualifications to ensure broad equality; employability which focused on core of transferable skills useful to employers, and a breadth of student choice which allowed students to change programme, specialise in certain areas and also made course more attractive to prospective students in an era of increasing competition for students at this level. These four aspects i.e. quality, benchmarking, employability and breadth of student choice will now be briefly examined in turn together with particular emphasis on their impact on post-16 vocational education.

The quality of the qualifications depends on several factors: the administrative procedures of the institution and the examining body (which may not be the same); the facilities available for students; the content of the programme studied and the quality of learning and teaching. The first two factors are largely outwith the scope of this study, but the content of the programme and the quality of learning and teaching are of prime importance.

The quality of provision within Higher Education (HE) (encompassing both traditional academic and vocational subject areas) became the province of the QAA. The remit of the QAA covered all factors outlined above, but of particular interest to this study was the production of qualification frameworks (QAA, 2001; QAA, 2008a; SCQF, 2001) and subject benchmark statements (QAA, 2000; QAA, 2008b).

Qualification Frameworks and Subject Benchmark Statements: their influence on levels of learning and curriculum content

The usefulness and appropriateness of these documents has been discussed for some time (Hodgson & Spours, 1997; Jackson & Lund, 2000; Resnick, Nolan & Resnick, 1995; Shaw & Stoney, 1996). Although some academics remain sceptical as to the need for such controls (Stevenson, 2001) it was obvious that higher education, along with its counterparts in schools and colleges, was going to be subject to more rigorous, visible and comparable quality procedures.

The purpose of the subject benchmark statement is to “provide a means for the academic community to describe the nature and characteristics of programmes in a specific subject” (QAA, 2008b p.1) In other words, they provide a basis for a curriculum (albeit a broad one) for higher education qualifications within that subject area. Although there may be many variations within such programmes between and even within institutions, the broad basis of the curriculum should be common to all programmes in that subject area. The other purpose of the subject benchmark is “to represent general expectations about the standards for the award of qualifications at a given level and articulate the attributes and capabilities that those possessing such qualifications should be able to demonstrate.” (QAA, 2008b p.1)

The subject benchmarks, then, are designed to encourage broad similarity of content and level of achievement within a subject area. The qualifications frameworks for England, Wales and N. Ireland (QCA, 2004) and a separate one for Scotland (SCQF, 2001) were designed to

“provide a means by which credit can be gained by learners for their achievement...It will provide flexibility and choice for learners and employers and support the government’s skills strategy”

(QCA, 2004)

A separate framework is provided for higher education, whose aim is to:

“provide important points of reference for setting and assessing academic standards to higher education providers and their external examiners assist in the identification of potential progression routes, particularly in the context of lifelong learning promote a shared and common understanding of the expectations associated with typical qualifications by facilitating a consistent use of qualifications titles across the higher education sector.”

(QAA, 2008a p.6)

The Scottish framework aims to:

“Help people of all ages and circumstances access appropriate education and training over their lifetime to fulfil their personal, social and economic potential. Enable employers, learners and the public in general to understand the full range of Scottish qualifications, how they relate to each other, and how different types of qualifications can contribute to improving the skills of the workforce”.

(SCQF, 2001 p.vii)

It is significant that the SCQF covers all Scottish qualifications beyond the 5-14 curriculum i.e. from Access 1 to Doctoral level, and is therefore more focused in its aims on workplace skills and competence, whereas the QCA and QAA frameworks separate out qualifications into vocational and higher education sectors (Certificate of Higher Education to Doctoral levels) only. In terms of this research into levels within vocational education, the SCQF will therefore be the more useful framework for reference.

Generic Level Descriptors

In order to fulfil the aims of these frameworks in ensuring access, progression and broad equality of achievement, it is necessary to write generic level descriptors (Moon, 1996). These are descriptors which describe the types of learning which should be encompassed at the given level under various categories: knowledge and understanding; practices (applied knowledge and understanding); generic cognitive skills; communication, information technology and numeracy skills (the so-called “core” or “key” skills); and autonomy, accountability and working with others

(SCQF, 2001). These are named generic descriptors because they are intended to be applied generically to any subject at a particular level. It will be noted that no specific reference to psychomotor skills is included in these generic level descriptors.

The term “level” is used to describe the outcomes of learning at a particular stage in the framework. They provide “rungs on the ladder” of learning which enables progression to be made and students can step on and off the ladder at various points. This is particularly useful when qualifications are made up of modules or units of learning which can be grouped together both horizontally to make up a level or stage of learning and vertically to make up a progressive programme (Jackson, 1998; Jenkins, Scurry & Turner, 1994; Shaw & Stoney, 1996). These modules can be written so that the learning outcomes accurately reflect the generic level descriptors for that level. This use of a modular framework linked to levels of learning enables students to have maximum choice within a programme e.g. two essential units plus two optional units at the same level to make up a semester’s programme, but also enables students more easily to transfer to another programme as they can demonstrate the achievement of learning at an equivalent level.

Module or Unit Descriptors

The various influences described above converge in the form of the module or unit descriptor, which is the basis of many higher education programmes. The characteristics of these are as follows: they describe an appropriate level of achievement with reference to the qualifications framework; they are expressed in learning outcomes i.e. what the student will be able to do at the end of the module; and they contain content relevant to the subject benchmark statement. The introduction and use of learning outcomes in HE is closely allied with the rise of competence-based assessment (James, 2005) which will be discussed in detail in Chapter 2. The learning outcomes also become the focus of assessment during and at the end of the module i.e. assessment must be so designed that students can demonstrate that they have achieved the learning outcomes for the module or unit (James, 2005 p. 85).

These module or unit descriptors must be based on the generic descriptor for that level, and this is where some issues and problems arise. The very generic nature of these level descriptors means that they are imprecise and open to interpretation. For those concerned with particular aspects of some vocational subjects, there is a further problem. It is the very nature of descriptors that they show progression from one level of achievement to the next; in other words, that there is implied a hierarchy or taxonomy of learning through which the learner must proceed in order to achieve the highest level required. A close examination of, for instance, the generic level descriptors in SCQF (2001 pp.27-37) shows that the main basis of the taxonomy which underpins these is cognitive. Only in some examples under Practice: Applied knowledge and understanding, are some skills referred to, and there is no distinction made between psychomotor skills and other applied learning. If one is considering, for example, a degree in history, this presents no problem. However, for a degree in nursing, medicine, music, sport or hospitality psychomotor skills must form an essential part of the curriculum. Indeed, the original Subject Benchmark for Hospitality, Leisure, Sport and Tourism (QAA, 2000b) has, as one of its criteria, that “graduates will be able to plan, design and execute practical activities using appropriate techniques and procedures” (QAA, 2000b p.7). It is the information which allows curriculum developers to assign appropriate practical techniques and procedures to the appropriate level that is missing from the generic level descriptors. How then, are course designers and lecturers to develop these techniques and procedures through the levels of the programme, and provide evidence to those concerned with quality assurance that these practical activities are appropriate to the level of study? This is the issue which will be debated and explored in this thesis.

Currently, universities are free to write their own module descriptors and their quality departments monitor that these are at the correct level as shown in the appropriate generic descriptor for that level and also conform to the subject benchmark statement. In Scotland, the first two years of higher education can also be taken in a Further Education (FE) college, where the first year forms a Higher National Certificate (HNC) at SCQF Level 7 and the second a Higher National Diploma (HND) at Level 8. These qualifications are made up of Higher National Units

(HNUs) which are themselves levelled against SCQF. As the HNUs are used nationally across all Scottish FE colleges, these will form the basis of the primary research in this study as they are more standardised than university module descriptors.

An analysis of SQA HN Unit Learning Outcomes in relation to psychomotor skills

Establishing the scope of the study

The HNUs were firstly examined to identify whether or not they contained any practical content which might require psychomotor skills. The proportion of such units against the whole range of units available was calculated. Then, within the identified units, the individual learning outcomes were examined for evidence of psychomotor skills requirements. The proportion of these learning outcomes within the units was calculated to give an approximate value to the scope of psychomotor skills required at these levels.

There are 3,803 HNUs in total. Of these, 670 were identified as potentially containing Learning Outcomes which might require psychomotor skills; 17.6% of the total number. These were from a wide range of subject areas, including the ones of prime interest to this study (hospitality, music, dance, drama, art & design, veterinary medicine, dentistry, nursing and allied professions) but also sport, construction and crafts. The full list of Units can be seen at Appendix 1.

Of these 670, 125 were unlevelled. These were discarded as these were older Units whose Learning Outcomes had not been written with a particular level in mind, and in many cases had been replaced by a more up-to-date, levelled Unit, although the old Unit still appears in the catalogue. Thus, 546 HNUs were scrutinised; 14.4% of the total number of HNUs in the catalogue. When the detailed scrutiny was undertaken, 7 Units were unavailable, leaving 539 (14.2% of the total HNUs) to be studied.

The results of this study can be seen in the table below.

Total HNUs	HNUs scrutinised	LOs in the Scrutinised HNUs	LOs where psychomotor skills required
3803	539	1771	859

Table 1. *SQA HNU Learning Outcomes where psychomotor skills are required.*

Thus, 48.5% of the learning outcomes in the HNUs examined were in fact assessing an element of practical psychomotor skill. In the vocational subject areas of interest to this study, therefore, within the SQA HNUs, nearly half the Learning Outcomes refer to the teaching, learning and assessment of practical psychomotor skills. Thus the way in which these skills are treated in the curriculum is a matter of importance for those working in these vocational subject areas.

Chapter 2: The vocational/academic interface.

The nature of vocational education

It has already been mentioned in Chapter 1 that the United Kingdom (UK) education system seems to differentiate between vocational and academic education. The various initiatives aimed at parity of esteem between types of education (Higher Still in Scotland, the use of qualification frameworks such as SCQF and QCA and the creation and use of generic level descriptors) seem at odds with other government initiatives which are aimed at “under-achievers” i.e. those learners who have not sufficient academic ability and therefore need a more work-orientated (vocational) course. Little research has linked together those areas of study which require the student to be able to use cognitive, affective and psychomotor skills in order to successfully practice their profession. These areas would include medicine, veterinary medicine, dentistry, physiotherapy, nursing, sport, music, dance, drama, hospitality and some areas of art and design. These could for convenience be subdivided into three categories as follows: those subjects which require acknowledged high cognitive ability and are held in great esteem (e.g. medicine, veterinary medicine and dentistry); those subjects which require a very specific type of ability (e.g. music, dance, drama, sport and art and design) and those which are deemed to require less academic and more practical ability (e.g. nursing, physiotherapy and hospitality).

It is apparent that vocational education i.e. education which prepares the student for a particular career or industry, includes an extremely wide range of subjects, from medicine to plumbing, from music to hospitality. Only the most prestigious of these, such as medicine and law, have been the province of higher education for many years, as they have always recruited from the most academically able candidates. Others, such as teacher training and nursing, have moved from specialist training colleges into higher education more recently (Callery, 2000). Many performing arts, such as music and dance, have kept specialist colleges but are able to offer degrees either themselves or through arrangements with a university. Such subjects have

often developed two or more strands; a more academic and theoretical course within a university, and a more performance based course which could be offered either through a university or a specialist college (QAA, 2002a; QAA, 2002c; QAA, 2007). Other vocational subjects, such as hospitality, have developed a multiple approach where, depending on the career stage in the industry which it is hoped to enter, the student can choose from degree courses in universities, various levels of college course up to HND level, and the possibility of entering the industry and becoming qualified through the National/Scottish Vocational Qualifications (N/SVQs) system. The point of entry is largely dependent on the academic ability of the student, as entry to degree courses naturally requires evidence of greater academic ability than sub-degree courses or industry-based qualifications. As Hyland (2001 p.677) states, universities were the last education sector to be “influenced by vocationalising tendencies”.

Gallacher (2006) and Richardson (2007) both trace the recent history of further education in Scotland and England respectively which is also very relevant to the recent history of vocational education in the UK. Both note the strong influence of government policies on the FE sector and therefore on their provision of vocational education (Gallacher, 2006 p.46; Richardson, 2007 p. 391). They note that these policies have been the main driver of the introduction of the N/SVQ system which is now a major part of FE vocational provision. Gallacher (2006), however, also traces the history of HE provision in FE colleges and notes the rapid rise (by 141%) of HNC/HND students between the academic sessions 1985-86 and 2000-01 (Gallacher, 2006 p. 44) alongside their very wide range of other provision (Gallacher, 2006 p. 45). He notes in particular the wider range of students entering HNC/HND programmes (often older, with non-traditional qualifications and from more disadvantaged groups) (Gallacher, 2006 pp.48, 50) and identifies that the SCQF framework (described in Chapter 1) has greatly assisted these students by enabling them to articulate to the vocational degree courses offered by the post-1992 universities (Gallacher, 2006 pp. 52-53, 55-56). The SCQF framework would appear to have widened future choices for many students on vocational programmes; however, Edwards and Miller (2008) challenge the impact of the unified Scottish

system and say it has not had as much effect as it should on the ease of transfer between programmes (Edwards & Miller, 2008 p. 124).

It can be seen from the range of subjects encompassed within vocational education that these are extremely diverse; however, it is interesting to investigate what they might have in common. The cognitive ability required may vary; however, the subjects mentioned above also require the practitioner to use the affective domain (Bloom, 1956 as cited in Clark, 1999) either by taking account of feelings (medicine, veterinary medicine, nursing) or by the use of creative ability (art, music, dance, drama) and also by the need to perform practical psychomotor skills. A degree in history or mathematics requires a great deal of cognitive ability but does not require for its achievement a high level of ability in the other two domains. (These domains will be explored in details in Chapter 3). This characteristic of vocational education means that, diverse as the examples of vocational education are, they nevertheless have this broad range of abilities in common.

O'Connor (1996 p. 309) traces the roots of vocational education back to Aristotle and the different types of knowledge. Knowledge can be divided into two types: "pure" knowledge (*episteme*) and practical knowledge, which was itself divided again into two types: *techne* (technical or craft knowledge) and *phronesis* (more related to an ethical stance). *Techne* itself is divided into 4 areas: the person with the skill, the material, the format/plan and the final outcome (O'Connor, 1996 p. 309). This then is the basis of the UK (and many other European) HE systems: pure knowledge, as taught primarily by the ancient universities (Gallacher, 2006 pp. 52-53) and more applied or technical and practical knowledge as taught in colleges of FE and in post-1992 universities i.e. vocational education. *Techne*, however, was seen as being always taught alongside *phronesis*; in other words, as part of a broader, ethically based education without which the technical skills were thought to be of little use. O'Connor also cites Pring (1986 as cited in O'Connor, 1996 p. 310) who discusses the link between pure knowledge and how it might be used and argues that one should not be taught without the other. O'Connor also cites Polanyi (1969 as cited in O'Connor, 1996 p. 312) who identified the process involved in practical

learning which were effectively the four elements as identified by Aristotle in *techne* above. Indeed, if one was to study closely the elements in, for example, a practical kitchen HN unit such as that used for the basis of the primary research in this study, the four elements are clearly visible: development of the person, correct selection and use of materials, the organisation or plan of work and the final product are all important. O'Connor's (1996) argument is against a very narrow, employment-centred type of vocational education and training (such as that advocated by the N/SVQ system described below) and back towards the broader technical education that Aristotle envisaged, this giving students a stronger foundation and wider choices in their future (O'Connor, 1996 pp. 315-316). The recent research of Lucas, Claxton and Webster (2010) and Claxton, Lucas and Webster (2010) supports this view.

Stevenson (2001) highlights one of the main issues that may lead to lack of esteem for vocational knowledge; that is, the difficulty in articulating and describing such knowledge; Stevenson calls this "knowledge codification" (Stevenson, 2001 p. 647). He rightly states that codified knowledge, i.e. knowledge that can be described and written about, is the most highly prized in western society (Stevenson, 2001 p. 648). Of course, what can be described and written about can also be easily communicated to others; Stevenson (2001 p. 648) describes this as "specifying learning in observable and measurable terms". He goes on to explain the problems with codification, namely:

- 1) the difficulties in "translating" the required knowledge into verbal statements that include everything necessary;
- 2) that this has contributed to "ineffective and inappropriate dualisms e.g. practical versus academic, theoretical versus practical" and this had led to the valuing of verbally expressed knowledge more highly than other kinds (Stevenson, 2001 p. 650)
- 3) that codified knowledge is not easy to change and adapt to current society i.e. innovation, creativity, problem-solving (Stevenson 2001, p. 650)

Of particular relevance to this study is Stevenson's citation of Lundvall and Borrás (1997 p. 13 as cited in Stevenson, 2001, p. 651) who stated that

“Basically, knowledge remains tacit if it is complex and variable in quality, in situations where several human senses need to be used at the same time, when skilful physical behaviour is involved and when understanding social relationships are crucial”.

(Lundvall and Borrás, 1997 p. 13 as cited in Stevenson, 2001, p. 651)

This description is very relevant to many tasks within hospitality and also nursing; it is also relevant to music and dance. Could it be the lack of ability to describe and write about the skills in these areas which has led to the lack of esteem in which they are held? Is it possible, therefore, to find a means of describing the knowledge in these areas, or is there another method of codifying this knowledge which does not depend on the written word but on some other means of communication? Stevenson (2001) goes on to discuss this very point and deduces that “verbal description is only one form in which knowledge can be rendered” (Stevenson, 2001 p. 655). He also cites Polanyi and Prosch (1975 as cited in Stevenson, 2001 p. 653) who stated the importance of being able to differentiate “what we know from what we can say”. In other words, there is valuable knowledge that is not easy or even possible to describe in purely verbal form. This concept does not fit easily into the system of level descriptors as described in Chapter 1. Currently, therefore, it appears that the system of differentiating between levels of knowledge based on written descriptions is doing a disservice to certain types of knowledge, a view with which Lucas et al (2010) and Claxton et al (2010) agree.

Stevenson (2001) then discusses other way in which knowledge can be conveyed, including music and art, diagrams and other imagery. It is perhaps significant that demonstration is an acknowledged teaching method for many vocational subjects, including nursing, hospitality, music and in particular dance. Finally Stevenson discusses ways in which this kind of knowledge might move towards codification.

“First, I think we should embrace attempts at codification whose motive is to make vocational knowledge more accessible to unpack expertise for examination, for communication and for access. Secondly, I think we should embrace attempts whose motive is to evaluate and improve expertise... Thirdly, I think that attempts whose motivation is acknowledgment, recognition and crediting vocational knowledge should also be valued.”

(Stevenson, 2001 p.658).

The first and third motives mentioned here are indeed fundamental to the aims of this research. Dangers in the codification of this kind of knowledge are also expressed; these are the disaggregation of the knowledge so that the particulars are discerned but the whole vanishes; in believing that all knowledge is verbalisable, so that important knowledge is left out; in not recognising that there are intimate connections among knowledge, doing, purposes and functions, artefacts, tasks and settings; and in constructing mental representation to account for phenomena, believing that they actually exist in the form constructed, and losing sight of the phenomena themselves. (Stevenson, 2001 p. 658). These warnings will be taken into account when the results of the primary research of this study are discussed.

Developments in vocational education and training

The trend towards vocational education being provided more extensively in higher education came alongside other moves towards the broadening of vocational education provision (Dearing, 1995) as mentioned in Chapter 1. The introduction of such initiatives as Higher Still in Scotland, and Advanced Vocational Certificates of Education (AVCEs) in England (Department for Education and Skills [DfES], 2005), were designed to increase access to vocational education, to provide more choice to students at an earlier stage of education, and to move towards parity of esteem between vocational and more traditional academic subjects (Eraut, 2001). This has led to a more unified system of academic and vocational education, particularly in Scotland (Hodgson, Howieson, Raffe, Spours & Tinklin, 2004; Hodgson & Spours, 1997; Raffe, 2003; Raffe, Howieson, Spours & Young 1998).

At the same time as these developments within education, developments were also taking place within workplace training that were to have a huge impact on vocational education. The two main developments in this area were the move to the assessment of competence (i.e. what the trainee was able to do or perform rather than what he or she knew or understood), and the rationalisation of workplace training and assessment under National Training Organisations (NTOs) whose role was to define workplace competence within different job roles within their occupational area and produce standards to which workers and trainees could be trained, assessed and ultimately qualified. These qualifications are known as National or Scottish Vocational Qualifications (N/SVQs) and are discussed in more detail below.

The influence of government policies on vocational education and training

Another influence on the content of vocational courses has been government and industry policy, as after all these courses are preparing students to take up a career in a specific sector of industry, and will therefore impact on, for example, employment forecasts, changing trends in industry (for example the introduction of technology) and economic forecasts (Association of Scottish Colleges [ASC], 2001; Avis, 2004; Carter, 1985; Eraut, 2001; Holt, 1997; Hyslop-Margison, 2001). Government naturally wishes to ensure a supply of suitably skilled labour into the industries which are forecast to contribute to the economy in the future; industry are equally desirous of having a supply of skilled staff who they can take into their organisation with the minimum of training. The European Union (EU) policies on lifelong learning have also had an influence on the blurring of boundaries between different types of vocational education (Deissinger, 2000). Indeed it is government policy which has driven many of the recent changes in vocational education outlined above, such as the introduction of AVCEs and Higher Still, and this has also resulted in an elaborate programme of training and assessment of competence to provide qualifications in the workplace, i.e. the introduction of N/SVQs. The working group assembled to develop these proposed that

“a clear, coherent and comprehensive system of vocational qualifications should be developed that were directly relevant to the needs of employment and the individual. These national vocational qualifications (NVQs) should be a statement of competence clearly relevant to work and intended to facilitate entry into, or progression in, employment, further education and training...incorporating the assessment of:

- skills to specified standards
- relevant knowledge and understanding
- the ability to use skills and to apply knowledge and understanding to relevant tasks”.

(QCDA, 2009).

The appropriate standards were defined by the nominated National Training Organisation (NTO) for each industry sector and arrived at by consultation with industry. These qualifications have their own level structure, which does not refer to the level of learning as such but to the level of responsibility in the workplace, from operative (Level 1) to senior manager (Level 5). These qualifications are designed to be assessed in the workplace by workplace assessors to standards of competence, where underpinning knowledge is required but not emphasised as much as the ability to perform. A commonly held misapprehension is that N/SVQs are a form of training. In fact, they are not; they are merely an assessment system for competence in the workplace. Any training necessary to bring candidates up to the required standard must take place separately and prior to the assessment for the appropriate level of N/SVQ. A further influence came from the professional bodies who were themselves under pressure for their qualifications to conform to N/SVQ levels, but who also had a great influence on the content of higher education courses in their subject area; these often providing exemption from the professional body’s own examinations (Harris, 1997; Hotel & Catering International Management Association [HCIMA], 1999). N/SVQs and their assessment will be discussed in more detail later in this chapter.

More recently, there have been a number of further initiatives from the government to improve attainment and participation in education and training and therefore ultimately to enhance and improve employability (Dhillon, 2007). Most of these initiatives have been aimed at post-16 learners and are frequently concerned with the

partnerships and transitions between schools, further and higher education and employment (Guile & Okumoto, 2007; O'Donnell, Golden, McCrone, Rudd & Walker, 2006). From studying some of the government publications (Department for Children, Schools & Families [DCSF], 2008; DCSF, 2008a; DfES, 2007; Learning & Skills Research Centre [LSRC], 2004) and academic writers commenting upon these (Dhillon, 2007; Emmerson, Frayne, McNally & Silva, 2006; Guile & Okumoto, 2007; Lloyd & Griffiths, 2008; O'Donnell et al, 2006; Lucas et al, 2010; Claxton et al, 2010) it appears that these initiatives are aimed primarily at those groups of learners who do not have the academic ability to succeed in obtaining qualifications through the route of higher education and need an alternative method of achievement. This is of interest to those researching into vocational education as it seems to presume that those pursuing vocational education are doing so because they are not capable of a more academic route (Emmerson et al, 2006 p.5). This subject will be returned to in Chapter 3.

It is interesting that even the preferred style of learning is mentioned (DfES, 2007 p.5; Lloyd & Griffiths, 2008 p. 18) which indicates that the learners at whom these initiatives are aimed are those that do not enjoy a traditional classroom situation and prefer to have theory clearly related to practice. "Moderate to low achievers...are more likely to stay on in education if they have the option of taking vocational or work-based qualifications at school or college" (DfES, 2007 p. 6). The report goes on to discuss the reasons for this, namely that "The learning is hands-on rather than conceptual...and assessment is based more on what you can 'do' rather than what you can write" (DfES, 2007 p. 6). This seems to automatically assume that to be able to 'do' something implies a lower level of intelligence than be able to write about it – surely this is not necessarily the case, as Claxton et al (2010) would agree. Hyland (2001) has concerns about the long-term value of the knowledge learned in such a system:

“Whether it is theoretical, practical, pure, applied, factual or conceptual, for knowledge to be knowledge certain subjective or objective conditions have to be satisfied. If it is claimed that workplace knowledge – because it is existential, spontaneous, transitory and the like – needs only to meet subjective criteria, then the attempt to upgrade VET (Vocational Education and Training) will fail.”

(Hyland, 2001 p. 680)

He goes on to say that this might indeed be a good thing if it leads in due course to an overhaul of the vocational education system in the UK, which in turn would lead to parity of esteem with academic qualifications; a viewpoint with which the author of this thesis heartily agrees (Hyland, 2001 p.680). Brown (2008 p.11) states that

“Attribution of qualifications to levels is also always a political process, as it depends upon valuing certain types of skills, knowledge and understanding over others, and upon decisions about how demanding it is to make initial qualifications.”

For some skills, the only point in writing about them is to help others to learn how to do them or how to teach them; playing the piano for example. The LSRC report (LSRC, 2004a) examines most of the frameworks and taxonomies for learning and relates them to the needs of post-16 learners. It focuses almost exclusively on the cognitive and to a lesser extent the affective domains (Bloom, 1956 as cited in Clark, 1999) and only mentions psychomotor skills when evaluating inclusive frameworks such as Gardner’s theory of multiple intelligences (Gardner, 1999 as cited in LSRC, 2004a p. 100). In other words, a clear line seems to be being drawn between those who can think (achievers, academic, stay on in education) and those who can do (low achievers, need vocational or work-based learning and a different learning environment from conventional education). The author sees this as a simplistic view and intends to challenge it through the research which this thesis describes.

It may also be that motivation plays a factor in more vocationally orientated course as the students can actually see the relevance to their future of what they are learning, and therefore are more likely to make the effort. This is alluded to in the DCSF report (DCSF, 2008a) which talks about the new initiatives providing “knowledge and skills in a work-related context” (DSCF, 2008a p.26).

Moreover, it is also implied that traditional higher education is not capable of delivering the right level of training for employability that industry requires. Guile and Okumoto (2007) state that

“recent research has shown, however, that academic and vocational qualifications struggle to facilitate access and learning and employability in the creative and cultural sector. Because employers are not convinced that graduates have developed...the forms of ‘vocational practice’ that is a combination of knowledge, skill and judgement which they are looking for”.

(Guile & Okumoto, 2007 p.552).

However, as is debated later in this thesis, this is not seen as applying to all creative and cultural jobs as musicians and dancers these days are frequently graduates but still have the required vocational practice to enter their profession immediately. Guile and Okumoto’s (2007) definition of ‘vocational practice’, however, is an interesting one

“...the concept of vocational practice conceives of judgement as the outcome of the mediated relation between concepts, reasons and practice, thus implying the need for an iterative relation between the teaching and learning curriculum.”

(Guile & Okumoto, 2007 p. 571).

This issue will be returned to in Chapter 3 as part of the theory-practice debate.

The concept of competency in vocational education and training

The introduction of N/SVQs as a means of obtaining vocational qualifications in the workplace has brought to the forefront of academic debate the concept of competency. Indeed, it is “difficult to underestimate the impact of the rise of competence-based assessment on the shape of post-compulsory education and training since the second half of the 1980s.” (James, 2005 p.88). As previously stated, N/SVQs are a system for the assessment of workplace competency, and are also very situationally specific as many tasks have to be performed to the individual organisation’s specifications. As Billet (2001 p. 447) points out, this can lead to a

lack of transferability of learning from one situation to another. As competency is such an important issue in vocational education and training, and indeed is used to describe a certain level of learning within subjects such as nursing, it is worthwhile briefly to review the main arguments concerning it.

Definitions of competency

Johnson (2008) admits that defining competency is a problem (Johnson, 2008 p. 177). He cites Stanton (2004 as cited in Johnson, 2008 p.177) who discriminated between ‘weakly vocational’ and ‘strongly vocational’ education and training; the former being a more broadly-based education and the latter being typified by N/SVQs and the competency-based assessment which they contain. He rehearses many of the main arguments concerning the concept of competence (Johnson, 2008 p. 177) and concludes that the notion of competence is under-theorised. Can competence be only defined and assessed by a series of performance tests, or should true competence also contain other attributes, such as team working, and more transferable skills? (Gillis & Bateman, 1999 as cited in Johnson, 2008 p. 177). Claxton et al (2010) take an even broader view of competence:

“Real-world learning involves getting better at doing things. This could include making lasagne, propagating seedlings, fixing carburettors, caring for the elderly, drawing plans, solving equations, arguing and debating, writing poems and passing exams. From this perspective, the purpose of ‘understanding’ is to facilitate the development of expertise. Conscious comprehension is an adjunct to competence. Displays of understanding –writing journal articles, giving lectures, taking tests – are skilled performances, not different in kind from batting, cooking or acting. Studying, revising and exam-taking are crafts. How well one does in tests, therefore, reflects the mastery of those crafts rather than the size of one’s ‘intelligence’. And displays of knowledge do not guarantee that concomitant expertise has been developed. (People can talk knowledgeably about all kinds of things they are not very good at doing, for example)”

(Claxton et al, 2010 p. 16)

In the N/SVQ system, the actual definition of competency is never stated (QCDA, 2009). These qualifications are described as “work-related, competence-based

qualifications... (which)...reflect the skills and knowledge needed to do a job effectively and show that a candidate is competent in the area of work the NVQ represents”. Competency appears to be related to performance and is assessed primarily by the observation of that performance and its assessment against nationally agreed standards for a specific job role within a specific industry (QCDA, 2009).

Mulcahy (2000, p. 270) researching competency-based training in Australia, describes the conception of competence as outcome i.e. performing the task that is set. This seems to imply that any assessment of competence should be simply in the performance of the task to the required standard. This is the view found by the research of James (2001) who, in a study related to that of Mulcahy (2000), found that the views of one of the training managers whom she was interviewing thought that the workers’ “performance on the job says it all” (James, 2001 p. 303). Bell and Mitchell (2001) researching technical education in Canada, describe competency-based education as “a program of study with clearly defined, concrete, measurable objectives of which every student participating in the program must have demonstrated mastery upon program completion.” (Bell & Mitchell, 2001 p. 5).

It seems that, for competency-based training throughout the world, if there is no actual agreed definition, nevertheless those involved in competency-based training and education seem to have a broadly common concept of what is meant by competence.

Medical and nursing education has also moved towards a more competence-based approach. Graham (2005) writing about nursing education, describes competence in this field as: “safe practice, knowledge, ethical practice, performance of clinical skills and limited independence (Graham, 2005 p. 145). Bouriscot and Roberts (2006) also defined a similar “minimally competent” stage in medical education. Hill, Stalley, Pennington, Besser & McCarthy (1997, p.136) when discussing competency-based learning in traumatology, discussed the need for a national trauma core curriculum and proposed method based on “a hierarchy of competencies in the

cognitive, psychomotor and attitudinal domain”. It would seem that in the area of medically-related professions, to be competent is allied to being ‘fit to practice’, and consists of more than simply technical competence in clinical skills, though this forms an important part.

It appears, therefore, that the concept of competency is interpreted differently in different sectors of education and training. Haffenden and Brown (1989), discussing the nature of competence, concluded that there were in fact three different interpretations of competence found in their research within the agricultural, clerical, hairdressing and caring sectors: the ability to operate appropriately and independently within a limited area of skills, but not able to fulfil all the requirements of the job; a range of workers (craft level, supervisory level and so on); and the expected performance of ‘a competent, mature adult worker’ (Haffenden & Brown, 1989 p. 5). It is not surprising that they concluded that there were widely differing perceptions across these industries of the notion of competence. They suggested some components of a possible definition might include breadth, the ability to perform in a variety of situations, and being equipped for progression, amongst others (Haffenden & Brown, 1989 p.7). As will be discussed in Chapter 3, many authors agree that competence is not a final stage and progression is still possible (Brown, 2008 pp. 16-17). However, Billet (2001 p. 444) would argue that the ability to perform in a variety of situations is at a level above competence. In this he agrees with Johnson (2008) who stated “Modelling the different stages of developing expertise, Dreyfus and Dreyfus (1986) argue that tacit, intuitive understanding is a critical difference between expert and novice performances. This implies that a critical aspect of competence is fundamentally related to the specifics of the context in which it is engaged.” (Johnson, 2008 p.178). Hager (2004) also contributes to the debate and suggests it is imperative to

“distinguish the following three items:

- performance and its outcomes;
- the underpinning constituents of competence (capabilities, abilities, skills);
- the education, training or development of people to be competent performers.”

(Hager, 2004 p. 412).

In other words, people must be capable of being competent, must learn to be competent and must be able to perform to competent standards, however these are defined.

These latter discussions of competence are at some variance with the way in which this is described in N/SVQs and in similar qualifications throughout the world. It would seem that, broadly speaking, those mainly concerned with technical and work-based education and training favour the view that the main object of competence is competent performance, and that this performance also demonstrates any necessary knowledge. On the other hand, those taking a wider look at education, and those concerned with medical and allied professions, seem to think that competent performance is important, but is not the only thing required to be a competent practitioner. There also appears to be broad agreement, particularly in the medical and allied professions, that to be competent is not the end – there should be further progression; and indeed, on examining the description of the purpose of N/SVQs (QCDA, 2009) one of the aims is to facilitate entry into the workplace, further education or training. Also, competence can be at different levels, as evidenced by the N/SVQ framework (and by Bouriscot & Roberts, 2006), so competence can be seen as a stage, not a final end to education and training. This will be discussed in more detail in Chapter 3

Assessment of competence

The main issue regarding the concept of competence for most writers in this field is the means by which competence is assessed. Competence-based assessment is defined as “an assessment requiring learners to demonstrate the (same kind) of

competencies...that they need to apply in the criteria situation in professional life.” (Gulikers, Bastiaens & Kirschner, 2004 p. 5 as cited in Sluijsmans, Straetmans & van Merriënboer, 2008 p. 160). Unlike most traditional, classroom-based education, which is assessed by a wide variety of means (including “performance” but also various written and oral methods), the assessment of competence is mainly on performance, supplemented by a smaller amount of written and/or oral evidence. QCDA (2009) states that “Assessment is normally through on-the-job observation and questioning...The Assessor tests candidates’ knowledge, understanding and work-based performance to make sure they can demonstrate competence in the work-place”. There are only two possible results from this assessment; competent, or not yet competent. This is in contrast to more traditional forms of assessment, where although there may be a “threshold” or pass mark, nevertheless several possible grades of acceptable performance are available. This is true also of the practical examinations set by the ABRSM and the RAD, where the threshold “pass” mark is much higher than in traditional academic education, but nevertheless has above it various grades to distinguish between the performance of candidates above that mark. The assessments of the ABRSM and the RAD will be returned to later in this thesis.

This raises some interesting issues. There is no doubt that some areas of vocational education lend themselves very well to this type of assessment. Clinical skills in nursing, medicine, dentistry and veterinary medicine, kitchen skills in hospitality, art and design, the performance of music, dance and drama would all be suitable for this. The issues for those designing assessments and curricula in higher education in these subject areas and how to combine this kind of assessment in certain areas with other forms of assessment for other parts of the programme, and, of course, how to distinguish between competent performance at different levels of a programme. However, is evidence of competent performance equivalent to evidence of capability (Eraut, 1994 as cited in James, 2005 p.87)? Maybe it is equivalent only to a certain kind of capability. Brown (2008 p. 15) introduces the notion of “skilled incompetence” where, having completed appropriate education or training, the new

worker finds themselves in the new context of work with the skills but not perhaps the ability to use or adapt them to the context in which they now find themselves.

It appears that students on vocational programmes appreciate a more practical competency approach to assessment of their skills. Bell and Mitchell (2001) in their comparative study of competence-based and traditionally taught technical students found that it was easier and appeared more relevant to the students when assessment was based on competence tests rather than on more traditional forms of assessment. Taras (2007) holds the view that competency based assessment is useful for formative assessment as part of the learning process but should not be sufficient in itself for summative assessment (Taras, 2007 p. 368). Boursicot and Roberts (2006) also noted that for medical students it was important for all stakeholders to be sure that the students were deemed to be competent in clinical and interpersonal skills and that this was more relevantly assessed by competence based assessment than by the traditional examination. However, difficulties were encountered when agreeing on “threshold competence” (i.e. the pass mark) (Boursicot & Roberts, 2006 p. 87) and in agreeing standards (Boursicot & Roberts, 2006 p. 87; Taras, 2007 p. 365). These issues will be revisited at a later point in this thesis.

How competency assessment is linked to vocational education and training

In traditional education, assessment is normally instigated to check the progress of students either during study (formative) or on completion before exiting or progressing to another stage (summative). However, in the N/SVQ system, assessment is entirely separate from any training or education programme which may be provided; in fact, the two are “divorced” (James & Diment, 2003 as cited in James, 2005 p. 87). However, Sluijsmans, Straetmans & van Merriënboer (2008 p. 160) held that “CBL (competence-based learning) (is) more likely to succeed if learning, instruction and assessment are constructively aligned”.

The relevance of the concept of competence to psychomotor skills

As will be discussed in Chapter 3, the relevance of the competency debate to this study is not only its contribution to the development of vocational education in the recent past, but also the suitability of competency-based assessment to the practical psychomotor skills which are the subject of this thesis. The concept of competency will be returned to when discussing this and also when examining the assessment methods used for practical psychomotor skills in the areas of music and dance. In Chapter 1 the problems with designing suitable practical assessments for different levels was highlighted, and the pressure to use instead written assessment so that levels could be distinguished by the use of the cognitive vocabulary. Edwards and Miller (2008 p. 123) call this “academic drift” and define it as entailing “the valuing and greater uptake of academic practices at the expense of vocational qualifications and practices” and states that the unified system within Scotland has exacerbated this. In particular, he observes that this is more acute the higher the level of the qualification (Edwards & Miller, 2008 pp.127-128). The authors go on to discuss in some detail the assessments for some of the HN Units on the Professional Cookery by both lecturer and students. The students prepared something that they could take to interviews to demonstrate their ability to put together high-quality presentations. The lecturer linked this to the ability to present oneself and one’s cooking in a workplace context

“rather than to any specific academic values. We see here the language of ‘research’ coming in even for a relatively low level course which one might consider to be very practically based. The point here is that the lecturer linked the literacy practices of research involved in the activity to the workplace rather than to the academic.”

(Edwards & Miller, 2009 p. 129).

Here is an excellent example of the use of academic practices, used in a meaningful way, to enhance and underpin the practical requirements and to be of real use in employment. They go on to describe the good practice of students working in the college training restaurant which is open every day to “real” customers: in other

words, fulfilling both the requirements of the unit assessment but also of real value to the world of industry for which the students are preparing (Edwards & Miller, 2008 p.130). In other words, the links and closeness to industry are enough to give the course its prestige without the need to introduce more “academic drift”. This would appear to be close to the concept of “fitness to practice” which will be discussed in the following Chapter.

Chapter 3: The Psychomotor Domain and its place in the Curriculum.

The psychomotor domain

The importance of psychomotor skills to the curricula of several subjects having been established, it is now necessary to discuss the evolution of academic thinking about the development of these skills, their place in curriculum design and how they are viewed by the quality bodies such as QAA, QCA and SCQF.

The starting point for any discussion of taxonomies of learning must begin with Bloom's Learning Domains (Bloom, 1956 as cited in Clark 1999; Krathwohl, Bloom & Bertram, 1973 as cited in Clark 1999; Simpson, 1972 as cited in Clark, 1999). In the 1950s Bloom led a team of researchers who analysed learning behaviours. Their results identified three separate domains of learning, namely cognitive, affective and psychomotor. Each of these will now be discussed briefly in turn.

In the cognitive domain, Bloom and his fellow researchers identified six stages of cognitive learning, each of which built on the preceding level thus forming a hierarchy or taxonomy. Significantly, "Each one must be mastered before the next one can take place" (Clark, 1999 p.1). This can best be viewed in tabular form as below:

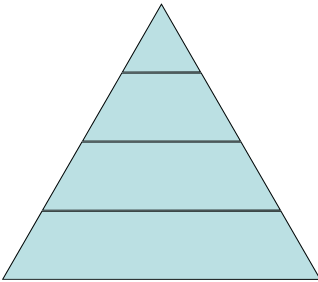
	Evaluation	Judges the value of information
	Synthesis	Builds a pattern from diverse elements
	Analysis	Separates information into parts for better understanding
	Application	Applying knowledge to a new situation
	Comprehension	Understanding information
	Knowledge	Recall of data

Fig. 3.1 The Cognitive Domain
(Martin, 2002).

This taxonomy is familiar to most education professionals as being the basis of the levels of learning used within the generic learning descriptors of many qualification frameworks (SCQF, 2001; QCA, 2004).

The next domain identified was the affective domain; this domain describes the manner in which people deal with emotional matters such as feelings, appreciation, enthusiasms, motivations and attitudes (Clark, 1999 p.3).

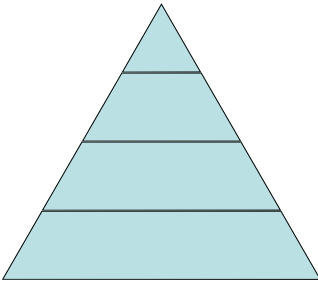
	Internalising Values	Behaviour which is controlled by a value system
	Organisation	Organising values into order of priority
	Valuing	The value a person attaches to something
	Responding to phenomena	Taking an active part in learning, participating
	Receiving phenomena	An awareness, willingness to listen

Fig. 3.2 The Affective Domain
(Martin, 2002).

This domain is less familiar to educators but its influence can be seen in those sections of generic level descriptors relating to autonomy, accountability and working with others (SCQF, 2001). This domain would also be relevant for descriptors within the performing arts such as music and dance (QAA, 2002a; QAA, 2002c; QAA, 2007).

The final domain, and the one with which this thesis is most concerned, is the psychomotor domain. This domain was identified firstly by Bloom (1956, as cited in Clark, 1999) and developed by Simpson (1972, as cited in Clark, 1999).

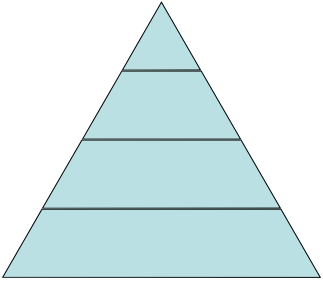
	Origination	A learner's ability to create new movement patterns
	Adaptation	A learner's ability to modify motor skills to fit a new situation
	Complex Overt Response	The intermediate stage of learning a complex skill
	Mechanism	The ability to perform a complex motor skill
	Guided Response	The early stage of learning a complex skills which includes imitation
	Set	A learner's readiness to act
	Perception	The ability to use sensory clues to guide physical activity

Fig. 3.3 The Psychomotor Domain

(Martin, 2002).

Clark (1999) describes this domain as including “physical movement, coordination and the use of the motor-skills area. Development of these skills requires practice and is measured in terms of speed, precision, distance, procedures or techniques in execution” (Clark, 1999 p.4). As can be seen above this domain is divided into no less than seven categories from the simplest to the most complex.

This domain was the least developed of the three at the time of its publication. However, there have been further versions since. Harrow (1972) identified six categories, namely involuntary movement, fundamental movements, perception, physical abilities, skilled movements and no discursive communication. Dave (1975,

as cited in Clark, 1999) identified a five-stage process which consisted of imitation, manipulation, precision, articulation and naturalisation.

Although these versions of the psychomotor taxonomy contain much that could be used to inform about the performance of psychomotor skills in general, there is insufficient detail for them to be used to inform descriptors of levels of learning. In particular, there are insufficient gradations of the stages of learning a complex motor skill. To examine this in more detail, the work of Gagné must be considered.

How psychomotor skills are learned

Gagné (1966) identified various types of learning including one which he described as “Chaining – a sequence of two or more previously learned Ss (external signals) and Rs (responses).” Gagné (1966 p.39). He refers in particular to the learning of motor skills, and points out the importance of each act being performed correctly and in the proper order in achieve success (Gagné, 1966 p.87). In the learning of motor skills, he emphasises the importance of the instructor who should provide external clues for the selection of the correct next link in the chain. This is also mentioned by Morgan, Ponticell and Gordon (1988) who emphasise the expertise of the instructor in breaking down the task into suitable sized steps. Once all the links are known to the learner, he or she needs to re-instate them one after the other in the proper order. Contiguity is also emphasised i.e. each link in the chain must be executed in close time succession if the chain is to be established. Repetition is seen as a necessary part of the process in order to “smooth out” the rough spots and prevent the forgetting of links. Lastly the importance of reinforcement is indicated as the terminal satisfaction of successful completion helps ensure the establishment of the chains and this is best done immediately (Gagné, 1966 p.87). He then cites the importance of chaining to the learning by vocational students in such subjects as sport, music, art and scientific experiments (Gagné, 1966 p.97). It can be seen that many of these issues are relevant to the teaching and learning of psychomotor skills across a range of disciplines. In later work he discussed psychomotor skills in relation to types of learning outcomes, citing examples such as driving, operating a computer keyboard, playing a

musical instrument and sport (Gagné & Driscoll, 1988). “The function of motor skills is to make possible the precise, smooth and accurately timed execution of performance involving the use of muscles” (Gagné & Driscoll, 1988 pp. 58-59). This work therefore is probably the first to include criteria which could be used within a workable taxonomy of psychomotor skills, namely accuracy, smooth transitions from one movement to another and the inclusion of a time element. Especially important to this thesis is the suggestion that any learning outcomes concerning motor skills should use the verb “executes” e.g. “executes the planing of a one-inch board”. Alternative verbs suggested include “perform”, “carry out” or words very specific to the task being undertaken such as “swim” and “throw” (Gagné & Driscoll, 1988 p.85).

The principles of chaining were further developed by Grant and Evans (1994) as they examined teaching skills using behaviour analysis techniques. They identified various stimuli which assist in the learning of skills; the first of these is “prompting” (which can be verbal, gestural, picture, physical or modelling). The use of these can easily be identified across the learning and teaching of several vocational disciplines; in particular the use of modelling or demonstrating is used in ballet classes and hospitality kitchen practice classes alike. Slaats, Lodewijks and van der Sanden (1999) found the use of these techniques to be widespread in vocational education. Once the technique has been learned by this method, the use of verbal or gestural prompts may be enough to stimulate the next step in the chain. As the learner becomes more confident, the prompts may be gradually reduced and removed, a technique known as “fading”. Prompts are graded according to their strength: physical prompts are the strongest (e.g. the manipulation of students’ limbs into the correct position in a ballet class), modelling and pictures are of intermediate strength and verbal and gestural prompts are the weakest. However, the effectiveness of this method is dependent on the size of the steps in the chain; if these are too large, any prompt may be ineffective. Grant and Evans (1994) go on to discuss the use of chaining within vocational education in particular, explaining that chains in these areas consist of long and complex sequences of stimuli and responses that requires a considerable amount of initial learning. In particular, Grant and Evans (1994) look at

three methods of teaching psychomotor skills; whole task (where the task is not broken down into steps), forward chaining (where the trainee starts with the first step in the chain, then adds the second and so on) and backward chaining (where the trainee completes the final step and gains the immediate feedback of successful completion, then learns the step before and so on). It is stated that equal success has been achieved by the use of both forward and backward chaining, but “it may be that certain types of chains are best taught using one method rather than another” (Grant & Evans, 1994 p. 235). Finally, they emphasise that to teach using any kind of chaining, the detailed analysis of the overall task and its breakdown into the right size of individual steps is essential. This aspect is also mentioned by Argyle (1988) in his study of non-verbal behaviour, where he states that behaviours can be divided into sequences which can be put together to construct larger behaviour sets (Argyle, 1988 p.15). Argyle’s (1988) work will be returned to when discussing possible research methodologies for this study.

Skinner (1966) brings to the debate the theories of Pavlov (Skinner, 1966 p.50) regarding reinforcement. Skinner (1966) points out that the likelihood of the correct response to the stimuli can be increased through the use of reinforcement which can be either positive or negative. Reinforcement can be through marks or grades for overall work (as in conventional higher education) or more informally and immediately in a practical situation through the feedback given to students by teachers and lecturers. Once again, it is only necessary to observe a practical kitchen class or ballet class to note that teachers and lecturers give both positive and negative feedback all the time, both whilst students are learning individual steps and on the finished “product”. Skinner (1966) refers to both external reinforcement such as grades and also internal reinforcement i.e. the satisfaction of successful learning (Skinner, 1966 p.407) and refers particularly to this type of “self-reinforcement” when learning sport, music and drawing (Skinner, 1966 p.408).

Skinner (1966) goes on to discuss types of behaviour which can be voluntary or involuntary. In this thesis only voluntary behaviour is being examined i.e. that behaviour which is willed by the operant (Skinner, 1966 pp.118-119). In other words,

the responses to the stimuli identified by Gagné (1966) are learned behaviours which the student wants to do in order to master the overall task. Skinner (1966, pp.118-119) further points out that success in such areas as drawing and singing can only be achieved by utilising a long period of conditioning. He also refers particularly to the learning of dance movements which he states is through imitative behaviour developed by the use of relatively discrete sets of responses (Skinner, 1966 p.120). This would agree with the work of Grant and Evans (1994) on the use of modelling or demonstrating when teaching psychomotor skills and indeed with the work of both Gagné (1966) and Grant and Evans (1994) on the concept of chaining and the size of links in the chain. In fact Skinner goes on to discuss the use of prompts to stimulate behaviours needed in the chain (Skinner, 1966 p. 213) and that of chaining itself (Skinner, 1966 p.224). He gives the very pertinent example of learning to play a piece of music: “long chains organised as single sequences as exhibited as we...play a piece of music” (Skinner, 1966 p.224). He also points out the importance of the links in the chains appearing in the same order; in other words each link in itself is not just a response to a stimulus but becomes the stimulus for the next response (Gagné, 1966; Skinner, 1966 p.224). This is of great interest when considered alongside the theories of chaining put forward by Grant and Evans (1994) as it would seem to argue in favour of the forward chaining method. It would also seem to imply that understanding of the process on behalf of the student who would be greatly advantaged if he or she understood how each link in the chain contributed to the next. This theory is supported by the work of Ryle (1949) who held that knowing how to perform a task requires a combination of cognitive and psychomotor processes.

In later work Skinner (1968) looks at methods of teaching and learning and his theories expounded here are of relevance to this thesis. He describes the “etymology of teaching” into types; development (natural in the environment), education (said to be the “culture of the intellect or mind”), acquisition (the absorbing of information and the acquisition of knowledge and skills) and construction (where the teacher instructs and informs) (Skinner, 1968 pp.2-5). It is interesting that he seems to differentiate here between intellectual or cognitive learning and the learning of skills.

He particularly emphasises the importance of learning by doing as being one of the three main ways of learning (the others being by experience and by trial and error; both also relevant to the learning of psychomotor skills) (Skinner, 1968 p.5).

The importance of practice in mastering psychomotor skills

When discussing learning by doing Skinner (1968 p.5) also emphasises the importance of frequency of practice to learning of this type. This aspect is also found in the music literature (Sloboda, Davidson, Howe & Moore, 1996) which links the frequency and organisation of practice to grades achieved, which in themselves are positive reinforcements to further learning (Skinner, 1966). It can be observed that, when learning a psychomotor skill, students in many of the fields of interest to this thesis may understand fairly quickly what they are meant to do: however, actually performing the task correctly and to the required standard may take much longer (Burgoyne & Stuart, 1976 as cited in Carter, 1985). This is particularly true if the criteria mentioned above of accuracy of execution, smooth transitions between steps in the chain and completion within an appropriate time-frame are required (Gagné & Driscoll, 1988). Sloboda et al (1996) however raise a further question which may be relevant; namely, whether formal grade achievement is a true measure of success in this type of learning. Further research in this area was undertaken (Davidson, Howe & Sloboda, 1997) which emphasises the links between practice and success, though other factors also contributed. Davidson (1997) also highlights the importance of two affective attributes to success; namely cooperation with others and communication. Practice is seen as been the way to perfect technical i.e. psychomotor skills; however, to achieve meaningful performance affective (and cognitive?) attributes are also needed. Carline (1968) discusses similar issues with regard to art; in particular the debate surrounding whether the acquisition of a sound technique (the skills of drawing in this case) are necessary precursors to artistic expression. This is certainly the case in ballet, classical music and indeed in classical cuisine; however, many more modern manifestations require arguably less technical skill but are still valid as means of artistic expression (musical theatre dance, popular music, using pre-

prepared ingredients in cooking). These issues will be returned to at a later point in the thesis.

Recent developments in the study of psychomotor skills

More recently, other authors have contributed towards a more detailed taxonomy of psycho-motor skills. Hannah and Michaelis (1977) devised a “Framework for Instructional Objectives” which identified five stages in skills development. (The full framework can be seen at Appendix II.) Their framework also places the development of skills alongside the development of intellectual processes (cognitive domain) and attitudes and values (affective domain). The skills development is preceded by a step called “data gathering” (Hannah & Michaelis, 1977 Appendix 3) which is common to all three domains and consists of the students observing and remembering. The five levels of skills development which follow this are, in ascending order:

- Imitating. “The student copies each element of a skill while following a model and receiving direct assistance.” (Hannah & Michaelis, 1977 p. 124)
- Patterning. “The student practices a skill with assistance while progressing toward unassisted performance.” (Hannah & Michaelis, 1977 p. 126)
- Mastering. “The student executes a skill in specified situations with precision and appropriate speed. Factors in measurement: accuracy, agility, consistency, coordination, dexterity, endurance, exactness, proportion and strength.” (Hannah & Michaelis, 1977 p. 130)
- Applying. “The student executes a skill independently in a variety of situations with precision and appropriate speed.” (Hannah & Michaelis, 1977 p. 134)

- Improvising. “The student modifies, adapts or introduces new elements to a previously learned skill. In short, the student has mastered the skills and can use it creatively.” (Hannah & Michaelis, 1977 pp. 137-138).

The work of Hannah and Michaelis (1977) is of great interest when focusing on the steps of acquiring a particular skill. The connection with the work of Gagné (1966) and Grant and Evans (1994) can clearly be seen. However, the “factors of measurement” (Hannah & Michaelis, 1977 p. 130) are extremely helpful when considering how to differentiate between levels of learning also (Clark, 1999; Gagné & Driscoll, 1988). In particular, the criteria of agility, coordination, dexterity and proportion would seem to imply that a level of complexity within a skill can be reached; these criteria may therefore be of particular use to this study.

Romiszowski (1981), in his work on the analysis of knowledge and skills, defined skills as follows “Skill shall be used to refer to actions (intellectual or physical) and indeed ‘reactions’ (to ideas, things or people) which a person performs in a competent way in order to achieve a goal” (Romiszowski, 1981 p.241). His work follows on from that of Gagné (1966) and Skinner (1966) in that he identifies a number of stages which build up to the performance of a skilled activity; each stage resulting from a stimulus within the preceding stage (Romiszowski, 1981 p. 252). His work is of particular interest when placed alongside the later competency debate and in particular when researching how skills might best be assessed. He also proposes that any one skilled action may have four component activities, namely perception, planning, recall of prerequisite knowledge, and finally the execution, or performance, of the action (Romiszowski, 1981 p. 242). In this, he agrees with other writers (Carline, 1968; Davidson, 1997; Ryle, 1949) about the necessity of combining cognitive with psychomotor skills in order to achieve successful skills performance. This combination of domains is also important in the work of Polanyi and Prosch (1975 as cited in Stevenson, 2001) who thought that practical skill

“consists in the capacity for carrying out a great number of particular movements [to achieve] a comprehensive result and skilful knowledge [consists in comprehending] a large number of details in terms of a significant entity. [The] two kinds of skilful knowing are actually always interwoven; a skilful handling of things must rely on our understanding them; and on the other hand, intellectual comprehension can be achieved only by the skilful scrutiny of a situation.”

(Polanyi & Prosch, 1975 p. 37 as cited in Stevenson, 2001 p. 653).

Romiszowski also proposed a “skills schema” (Romiszowski, 1981 p. 253) which itemised the four main categories of skills, namely cognitive, action (psychomotor), reactivity and interacting. This can be found at Appendix III. The last two categories would be separate aspects of Bloom’s affective domain (Bloom, 1956, as cited in Clark, 1999).

However, another interesting aspect of Romiszowski’s (1981) work is his division of each of the four categories of skill into two types, which he calls productive and reproductive skills (Romiszowski, 1981 p. 253). In terms of psychomotor skills this produces a very interesting division: within reproductive psychomotor skills he describes “sensori-motor skills; repetitive or automated action e.g. typewriting, changing gear, running fast) and within productive psychomotor skills he includes ‘strategy’ skills or ‘planning’ skills; arts and crafts, e.g. page layout design, ‘road sense’, playing football (Romiszowski, 1981 p. 253). This would seem to separate out the technical component of the skill from the creative or “artistic” element. This is a very interesting distinction when considering assessment systems in music, ballet and advanced cookery, for example.

Romiszowski also developed the “‘expanded’ skills cycle” (Romiszowski, 1981 p. 257) which can be seen in full at Appendix IV. This is “a conceptual tool to aid the analysis of any given activity in order to identify the causes of poor performance” (Romiszowski, 1981 p.257). It consists of twelve types of abilities which may be present in the performance of a skilled activity, namely:

- attention (ability to concentrate on the task);
- perceptual acuity (ability to recognise the stimuli);
- perceptual discrimination (ability to identify the stimuli in a “noisy environment”);
- interpretation (knowing the language of the stimuli);
- recall procedures (having a suitable “algorithm in store”);
- recall schemata (having relevant concepts and principles “in store”);
- analysis (ability to re-structure the problem situation);
- synthesis (ability to generate alternative solutions);
- evaluation (ability to think through alternatives and implications);
- initiation (ability to make and act on a decision);
- continuation (ability to see through the action to the end); and
- control (ability to self correct one’s actions automatically).

(Romiszowski, 1981 p. 257)

The first six of these abilities are compatible with the work of Gagné (1966) Skinner (1996) and Grant and Evans (1994) which is discussed above; however, the next three clearly relate to the cognitive domain and the latter three more to the affective domain as identified by Bloom (1956, as cited in Clark 1999). Moreover, Romiszowski (1981 p.257) is at pains to point out that although this cycle could be called a taxonomy “no hierarchical dependencies are implied”.

Finally in this discussion of Romiszowski’s (1981) work it is necessary to look at his suggested methods of diagnosing the causes of failure in the performance of a skill (Romiszowski, 1981 p. 263). The full diagram can be seen at Appendix V. Close examination of this model suggest that many of the causes of failure could be attributed not to the actual performance but to the cognitive abilities that allow for the recognition of the appropriate action and the planning of the action – the control of the action and its actual performance are the end results of these cognitive processes.

Although this may be rather biased towards more intellectual skills (the psychomotor skills quoted by Romiszowski as his examples are not complex ones [typing being

the most commonly used example]), it does seem to imply that in order to produce skilled performance, including the ability to self-correct, the cognitive dimension is also of great importance.

Marzano (2007) adds to the debate some insights into what he calls “procedural knowledge” (Marzano, 2007 p. 60) and states that “when fully developed, procedural knowledge can be performed at a level of automaticity or controlled processing. Automaticity means that the learner can execute the process without consciously thinking about the parts of the process”. He adds that for procedural knowledge to develop, it must be practiced (Marzano, 2007 p.61). The aspect of automaticity can be observed across many psychomotor skills of interest to this thesis: playing well-practiced scales on the piano; performing familiar exercise in ballet class; an expert chef chopping vegetables; an experienced nurse giving an injection. However, what is the purpose of achieving automaticity? Surely it must be so that the executor of the skill can think about other aspects of what they are doing; the well-practiced scale could be used within the performance of a Beethoven sonata; the ballet exercises within a variation of a particular character; the chef thinking about the proportion of each vegetable desirable in his finished dish; the nurse talking to the patient and distracting them whilst giving the injection. So, automaticity is the desirable state to be achieved for psychomotor skills in order for the performer of the skills to be able to concentrate on the creative, artistic or affective aspects of what they are doing. This is a view also taken by Polanyi and Prosch (1975 as cited in Stevenson, 2001) who gave the example of using a tool, but while using it, the user is focusing not on the various movements needed to manipulate the tool but on the desired end result of the task. In other words, the movements in using the tool become automatic as the user is focusing solely on the end result and not on the movements required to achieve this.

Billet (2001), writing about vocational expertise, gathered together some interesting research findings about the way in which knowledge was gained and used in vocational work. Hospitality workers (Stevenson, 1995 as cited in Billet, 2001) and airline counter workers (Beven, 1997 as cited in Billet, 2001 p. 436) “provided

evidence of the significant role of domain-specific knowledge in complex thinking, rather than general procedures”. He goes on to say that “Studies of hospitality workers concluded that not only the goals for performance, but much of the knowledge required for performance, was quite situationally specific.” (Stevenson, 1995 as cited in Billet, 2001 p. 436). This is an interesting observation as it presumes that successful performance can only be achieved if the correct knowledge is in place. This agrees with the work of many other writers discussed above (Carline, 1968; Davidson, 1997; Marzano, 2007; Ryle, 1949). However, Billet (2001) also makes the point that in vocational work of this nature the knowledge is domain-specific to the vocational area in which the work is taking place.

The work of Gouge and Yates (2002) is also relevant to this topic. Although primarily concerned with cognitive taxonomies, Gouge and Yates (2002) nevertheless apply these to artistic skills. Their taxonomies for the visual arts, music and drama can be seen at Appendix VI (Gouge & Yates, 2002 pp. 140-145). Their taxonomies imply that the successful performance of the arts, both performance and visual, is largely dependent on the cognitive processes used both in the preparation and actual performance of the art and also in the critical reflection of one’s own performance which is considered essential for a successful performer.

Finally, in this section, it is necessary to briefly allude to the work of Claxton et al (2010) who developed a model of the culture and context of learning for practical and vocational education known as the “4-6-1 model” (Claxton et al, 2010 p. 17). This model can be found at Appendix VII. This model transcends the three different domains of learning (cognitive, affective and psychomotor), and instead links them in order to define a more holistic approach to learning.

The development of academic thought about psychomotor skills can be summarised as follows:

- Psychomotor skills are one domain of learning alongside cognitive and affective learning (Bloom, 1956 as cited in Clark, 1999; Krathwohl, Bloom & Bertram, 1973

as cited in Clark, 1999; Hannah & Michaelis, 1977; Simpson, 1972 as cited in Clark, 1999)

- In order to be learned successfully, psychomotor skills benefit from being broken down into individual steps or links which can be put together to form sequences and chains (Argyle, 1988; Gagné, 1966; Grant & Evans, 1994; Romiszowski, 1981)
- The links in the chain may be taught by using various methods including modelling or demonstrating, pictures, physical prompts, words and gestures to prompt the correct actions (Grant & Evans, 1994; Hannah & Michaelis, 1977)
- The links in the chain should be learned in the correct order so that one link in the chain can itself provide the stimulus for the next (Gagné, 1966; Skinner, 1966; Romiszowski, 1981)
- The size of the links or steps in the chain may be a crucial aspect in successful learning: this may depend on the complexity of the task and possibly also on the level of learning? (Grant & Evans, 1994)
- Appropriate reinforcement, both positive and negative, can aid learning (Gagné, 1966; Skinner, 1966; Sloboda et al, 1996)
- Practice of psychomotor skills appears to be a necessity if proficiency is to be achieved (Marzano, 2007; Skinner, 1968; Sloboda et al, 1996)
- Proficiency can be measured using, amongst others, the criteria of accuracy, smooth unhesitant transitions between one link in the chain and the next, and speed (Clark, 1999; Hannah & Michaelis, 1977; Gagné & Driscoll, 1988)
- That successful performance may require the use of cognitive and affective skills as well as psychomotor skills (Billet, 2001; Carline, 1968; Davidson, 1997; Gouge & Yates, 2002; Marzano, 2007; Romiszowski, 1981; Ryle, 1949; Claxton et al, 2010)

Having reviewed the main academic work on psychomotor skills and how they are learned, it is now necessary to focus on views of their place in the curriculum. As has already been stated, competent psychomotor skills are a necessary part of many professions and therefore of the curricula designed to equip students for these professions. How then are they viewed by those writing about curriculum development and design in general?

The place of psychomotor skills in vocational education curricula

Rowntree (1985) discusses how skills can be cognitive and affective as well as psychomotor and gives examples of literary criticism (cognitive skill), counselling (affective skill) and violin playing (psychomotor skill). This would seem to give each domain parity of esteem within the curriculum. Carter (1985) was concerned with the demands of the professions when designing curricula; and that these demands should be the main driver in curriculum design. He makes the very important point that “in conventional HE of the academic kind, however, (skill) has not been clearly distinguished from knowledge” (Carter, 1985 p.140); the truth of this statement can be seen in the analysis of generic level descriptors and other quality documents in this thesis. He particularly points out the links between writing learning objectives that meet the needs of the curriculum (which has been designed to meet the demands of the profession) and the methods of assessment used. (His taxonomy of objectives for professional education can be found at Appendix VII.) He highlights four main areas of skills that should be assessed: namely information skills, mental skills, action skills (which include psychomotor skills) and social skills. This would seem to imply that generic level descriptors should include cognitive skills (information and mental skills mentioned above), psychomotor skills (action skills) and affective skills (social skills). Carter (1985) was writing about professional education rather than just education in general: can it be possible, therefore, that in the movement of training for the professions into higher education their requirements have not been considered in the same way as the traditional “pure” academic subjects such as history and mathematics?

This debate is also visited by those looking at the changes within education and vocational education in particular. Green (1997), discussing the possible amalgamation of general and technical education post-Dearing, points out that the technical skills and knowledge that underpin vocational practice and skills should be explicit and capable of being articulated in oral and written form. Why then is the articulation of these skills not found in generic descriptors? Could it be that, with the advent of competency-based learning, what Green (1997) describes as the already

“lean” notion of manipulative (in other words psychomotor) skill has become more “minimalist”, being free of both culture and theory? Green (1997) says that competence-based learning, derived from behaviourist principles, defines skills as the ability to perform pre-given tasks with predictable accuracy; this view is challenged by Ryle (1949). In other words, these skills were seen as “lesser” as they contained less theory; a situation mentioned by Carter (1985). Can this definition be applied to music and ballet performances? It seems to deny any aspect of creativity or communication. It may be that this definition contains some aspects of value, but maybe this is limited to the learning of the first few steps on the chain i.e. the gradual acquisition of the technical “nuts and bolts” which are required before progressing to higher levels of achievement (Carline, 1968; Davidson, 1997). Eraut (2001) adds to the debate the influence of government in designing meaningful education and training and paths into employment for those who might not otherwise find their way into post-16 education; in other words, it is possible that government has found it expedient to downplay the level of skills required in some vocational areas, excluding those which demand a certain obvious type of ability such as music, dance and art (Morgan, Ponticell & Gordon, 1988) in order to make it possible and attractive for these groups of learners to access education and training in these areas? Unfortunately in the process this has not served the needs of those who are capable and desirous of taking these skills to a much higher level and receiving appropriate recognition for them. The relevance of these arguments to the competency debate and the design and delivery of vocational qualifications in the workplace is obvious.

Eraut (2001) goes on to discuss how and when skills development should best take place and how it should be assessed. Some of these issues have already been addressed in the previous chapter; however, Eraut’s comments on how skills are taught within conventional education are relevant here.

“The problem with most traditional forms of professional and vocational qualifications is that they are based on totally inadequate models of competence and expertise; because they interpret the world of work mainly from the viewpoint of providers of education and training.”

(Eraut, 2001 p.94).

Although this has relevance to the competency debate it would also seem to imply that has been expedient for both government and education providers to try to fit vocational education into a model designed for general education and not to take into account the demands of the relevant profession (Carter, 1985 p.135). This may be partially explained by the particular characteristics of psychomotor skills within the vocational education curriculum; they require “expert” staff, time to practise, high staff-student ratios and expensive rooms and equipment (Alexander, 2007).

Eraut also makes the point that “In Britain, general qualifications are accorded higher status than work-related qualifications and play a major role in selection for well-paid jobs.” (Eraut, 2001 p.89). This would seem to be a narrow view of what a “work-related” qualification is; how does this relate to doctors or vets, who have both undertaken work-related qualifications and yet are able to obtain highly-paid jobs with great public esteem? So it would seem that Eraut’s comments apply to only some work-related qualifications. Likewise, musicians and dancers who have undertaken work-related qualifications, unless they achieve the very top of their professions, are unlikely to be well-paid, but they are still held in high esteem and presumably receive meaningful job satisfaction also. So it is only certain areas, which would include hospitality and perhaps nursing (and some other health-related professions such as physiotherapy) to whom these remarks could more accurately relate. Wood (1993) confirms through his research that work in hospitality is often regarded as low-status because of the both the personal service nature of the work and the types of workers employed (Wood, 1993 p. 3). Claxton et al (2010) crystallise UK society’s attitudes to vocational education as follows:

“Yet, as we know only too well, societies place some strange judgements of value on practical accomplishments. Cellists, surgeons and architects are esteemed, while folk singers, occupational therapists and civil engineers get less recognition. The occasional celebrity chef, gardener, craftsman, vocalist or footballer serve only to emphasise the more lowly esteem in which cooking, gardening, car mechanics, singing and sports are held – especially within education. ‘Abstract’ is widely seen as more intelligent, more complex, and better than ‘concrete’.”

(Claxton et al, 2010 p. 2)

To summarise the thoughts of writers on curriculum development on the place of psychomotor skills raises more questions than answers as can be seen below.

- Psychomotor skills are a necessary part of many professions and, in order to fit students to go into these professions, would appear to be an essential part of the curriculum they must follow (Carter, 1985)
- Psychomotor skills have a role in many pre-vocational professional qualifications but not perhaps in “pure” academic subjects such as history and mathematics (Carter, 1985)
- Technical psychomotor skills should be capable of verbal articulation (Green, 1997) or if not, by some other means of communication (Stevenson, 2001)
- Definitions of technical psychomotor skills appear to assume that little or no theoretical knowledge is necessary to perform them at any level (Green, 1997)
- It may have been expedient for government to agree with these definitions as it makes certain professions and their pre-vocational qualifications more feasible for a larger majority to enter (Eraut, 2001) (see also Chapter 2)
- The move of vocational subjects away from the traditional apprenticeships and into Further and in particular Higher Education may have been a factor in “downplaying” the skills element and teaching in a more conventional “academic” way for both pragmatic reasons (Alexander, 2007 p.214) and those to do with proving academic rigour and parity of esteem (Carter, 1985; Eraut, 2001)
- Although some professions which demand high levels of psychomotor skill are highly paid (doctors, particularly surgeons, vets) and many others may also held in high esteem (ballet dancers, classical musicians) many others such as nurses, physiotherapists and workers in certain areas of hospitality may not be (Claxton et al, 2010; Eraut, 2001, Wood, 1993)

Is it the salary that can be commanded on qualification that is the greatest factor in esteem? Is it the balance between theory and practice that impacts on the esteem of professions and therefore on the qualifications that lead up to them? These issues lead to the next crucial area of discussion; the theory-practice debate. As this is currently being conducted largely in the nursing education literature regarding the

place of clinical skills (which include psychomotor skills) it is useful to review recent research and opinion in this area.

The theory-practice debate in vocational education

Nursing was traditionally taught in the clinical practice area with blocks of study to cover the more theoretical aspects. The move of nurse education into Higher Education brought to light issues regarding nurses' confidence and competence in clinical skills (Farrand, McMullan, Jowett & Humphreys, 2006; Hilton & Pollard, 2005; Knight, 1998). In the quest for greater esteem for the profession alongside academic respectability for the programmes of study, the balance between theory and practice was felt to have tipped too far towards theory (Bjork, 1995 as cited in Knight, 1998). Further curriculum reform followed (Nursing & Midwifery Council [NMC], 2004; Royal College of Nursing [RCN], 2002a) in which clinical skills were given a more prominent role in the curriculum once more. As nursing is very much a public service the government is naturally concerned that nurses should be seen to be competent in all areas of clinical skills practice once they are registered (NMC, 2004).

The centrality of clinical skills to nursing practice having been established, the issues then arose of how to deal with these skills in the context of higher education (Hoyles, Pollard, Lees & Glossop, 2000; Turner, Doyle & Hunt, 2003). Should they be taught by lecturers, practicing nurses or clinical demonstrators (Hilton & Pollard, 2005)? In what environment should the learning and practicing of these skills take place, and in what proportion: classrooms, simulated environments and placements (Jack, Roberts & Wilson, 2003; Jones, 2002)? How should these skills be assessed; do they require a different, judgmental approach to assessment based on competence rather than the more traditional types of academic assessment based on a pass-mark (Banning, 2004; Carr, 2005; Endacott et al, 2004; Foster & Hawkins, 2004; Graham, 2005; Haigh, 2003; Watson, Stimpson, Topping & Porock, 2002)? This would lead to different modules in the nursing curriculum being taught and assessed in different ways i.e. a marked difference between theoretical and practical modules. The

ordering and balancing of theoretical and practical modules is also an issue (Hoyles, et al, 2000); this is also raised as an issue within creative and cultural industries by Guile and Okumoto (2007). Yet another issue is the time to practice and develop confidence in performing these skills once they are learned (Farrand et al, 2006; Knight, 1998); a theme echoed in music education literature (Davidson et al, 1997; Sloboda et al, 1996) as has already been mentioned. Of most importance to this thesis, how are learning outcomes related to clinical skills worded, and how are the different levels of clinical skills across the years of the programme differentiated?

Graham (2005) discusses the need to prove competent performance in clinical skills and defines competence as “safe practice, knowledge, ethical practice, performance of clinical skills and limited independence.” (Graham, 2005 p. 145). Stages in reaching competence are also discussed: firstly, novice practitioner; secondly, advanced beginner practitioner and lastly competent practitioner. The last stage, that of competent practitioner, is the one at which fitness to practice is achieved and is likely to be the final stage of pre-vocational education i.e. the end of a pre-registration programme for nurses. The concept of defining the final level, and then working back in stages from that level, is a model that could be applied to other psychomotor skills sets. The final stage is based on the standard of proficiency for entry to the register which states the need to “demonstrate safe application of the skills required to meet the needs of patients and clients within the current sphere of practice” (NMC, 2004 p.30). The University of Central Lancashire QAA Subject Review Report on Nursing & Midwifery (QAA, 2005) identifies four levels or stages towards competence in clinical skills, as follows: Level 1, development of relevant practice skills; Level 2, application of practice skills in various settings; Level 3, utilisation of appropriate evidence in the furthering of practical skills; and Level 4, development of professional practice (QAA, 2005 p. 2). This gives a type of informal taxonomy of practical skills within a Higher Education context, but focuses more on the context of the skills rather than on their increased complexity.

English (1993) and Graham (2005) both cite Benner’s (1984, as cited in English, 1993) model of skills acquisition, which identifies five stages in skills progression,

namely novice, advanced beginner, competent, proficient and expert. The expert stage appears to be post-registration and can only be achieved after time spent in practice gaining enough experience to become intuitive; an attribute questioned by English (1993). The first three stages however are closely akin to those in Graham (2005) and would ally easily with the usual three stages of nurse education. Bouriscot and Roberts (2006) also defined a similar “minimally competent” stage in medical education. However, these are still not specific about differences in skills competence and complexity at each of the different stages. According to Watson et al (2001) this is due to the fact that there is still no clear definition of competence within the clinical skills area and also the underlying tensions mentioned above regarding assessment of competence within a more academic higher education framework may have made moves towards more explicit definitions difficult.

It seems clear from the debate that the notion of competence, i.e. competent to practice, is still not at an ultimate level: for example, we could compare a concert pianist with someone who has the Associated Board of the Royal Schools of Music (ABRSM) Grade 8 with distinction or who has just graduated from music college with a top mark. The latter may well be described as competent, and it may well be the case that formal vocational education can take them no further, but that there is still headroom to keep on improving both in performance aspects but also in technical skill. This would equate with Benner’s (1984 as cited in English, 1993) notion of an expert practitioner. This differs somewhat from Billet’s (2001) definition of expertise which is described as placing

“primacy on the breadth and organisation of the individual’s domain-specific knowledge in solving problems and overcoming impasses. These attributes are central to the hallmark of expertise; the capacity to perform non-routine tasks within a domain of knowledge. Key differences between experts and novices in the performance of these tasks are premised on the organisation of their domain-specific knowledge; or necessarily the ability to process that knowledge.”

(Billet, 2001 p. 435).

However, Billet later adds to his definition of the expert the ability to adapt and use one's skills in different contexts. He cites the example of the concert pianist who is expected to perform to the highest standards every time regardless of situational differences e.g. piano, acoustics, repertoire (Billet, 2001 p. 444). This, however, could only possibly happen with experience, so maybe there is some link here to Benner's notion of an expert practitioner (Benner, 1984 as cited in English, 1993) and also to Dreyfus and Dreyfus (1986, as cited in Johnson, 2008 p.178) who argue that tacit, intuitive understanding is a critical difference between expert and novice performances. Certainly, there seems to be evidence for a level above that of a competent practitioner, one that perhaps cannot be taught or assessed by competency schemes such as N/SVQs, and one that can only come after experience has been gained probably following the end of the formal education required (Brown, 2008).

Brown (2008) discusses in some detail the difference between a competent and an experienced worker. He agrees with Eraut (2005 as cited in Brown, 2008) that the major transition is between education and practice contexts., and distinguishes between educational contexts, described as "learning trajectories... aligned to aspects of academic, codified knowledge or to the skills of interacting, critical thinking and learning in a formal environment dominated by assessments", and practice settings, where "the trajectories are aligned to types of client and how they are treated, the performance of tasks and roles, the development and sustenance of relationships with clients and colleagues, and contributions to group or organizational activities" (Eraut, 2005 p. 2 as cited in Brown, 2008 pp. 12-13). "Even if a person is able to produce competent performance in an "ideal" work setting (with relaxed time and resource constraints), this can be a different proposition from reaching "experienced worker" status". (Brown, 2008 p.13)

Brown's (2008) suggestion is that we should indeed stop regarding the qualification as an end point or final stage, and instead pay more attention to what happens after qualification is reached; in other words a developmental view of expertise as follows:

- “(1) Technically able to perform a task but have very limited practical experience of actually doing so;
- (2) Have successfully performed the task on a number of occasions;
- (3) Have performed the task many times and under a variety of conditions (i.e. experienced worker standard.);
- (4) Have substantial experience but are also able to support the learning of others (i.e. can perform a coaching or mentoring role.);
- (5) World class, those who are able to think through and, if necessary, bring about changes in the ways that tasks are tackled.”

(Brown, 2008 pp. 16-17)

Brown (2008) considers that this approach would be particularly appropriate to nursing:

“Thinking about the nursing example from earlier, do you think their post-qualifying experience would be transformed if it was widely recognised that they needed continuing support and that some of the slightly more experienced nurses had developed their skills of supporting the learning and development of others? Additionally, this approach of continuing to expect people to continue to develop a range of skills and to have a broad conception of expertise would seem to offer some protection against the development of “skilled incompetence” because continuing professional development and growth would be recognised as being strategically important.”

(Brown, 2008 pp. 16-17).

How then is it possible to describe what is likely to be the top level of skills necessary within an educational system i.e. what is likely to need to be described as competent to go out into the world and practice as a professional in the appropriate field? And if this is how the top level in the education system is to be regarded, then it may also be presumed that the bottom level would be that of a student with no formal training in the skills set whatsoever, i.e. a novice. If these two levels are the top and bottom levels of any taxonomy, the questions are; how many levels should there be in between (this may depend on the qualification framework used as described in Chapter 1) and how can levels between the top and bottom be differentiated and described?

In spite of these many obstacles, however, a working taxonomy has been arrived at and is in use across many institutions due to the need for a working model on which to base curriculum development and assessment. Edinburgh Napier University School of Acute and Continuing Care Nursing (Napier University, 2004), for example, has developed a clinical skills booklet in which student nurses keep a record of the skills they have achieved at what level. Four levels or stages are described as follows: Level 1 (Novice); Level 2 (Advanced Beginner); Level 3 (Safe Practice) and Level 4 (Competent); the last of these equates to immediate pre-registration i.e. the end of their pre-vocational education. Against these four statements of level, twelve sets of skills are identified e.g. there is a set for Vital Signs, and within another (Maintaining a Safe Environment) there is a sub-set for Drug Administration. Each of these is further broken down into specific skills e.g. administering an intramuscular injection.

What can be learned then from the theory-practice debate within nursing education?

- The move of nurse education from hospitals to Higher Education brought about a reduction in clinical (including psychomotor) skills (Farrand et al, 2006; Hilton & Pollard, 2005; Knight, 1998)
- Concern on the part of government and the public about nurses' clinical competence resulted in further curriculum reform in which clinical skills became more important (NMC, 2004; RCN, 2002)
- This highlighted many of the problematic areas of curriculum management regarding how psychomotor skills are taught in Higher Education, namely who teaches them (Hilton & Pollard, 2005), where they should be taught i.e. classrooms, simulated environments, placements (Jack et al, 2003; Jones, 2002), how should they be assessed; competence judgement or traditional percentage mark (Benning, 2004; Carr, 2005; Endacott et al, 2004; Foster & Hawkins, 2004; Graham, 2005; Haigh, 2003; Watson et al, 2002); the order in which they should be taught and the balance between theoretical and practical modules (Guile & Okumoto, 2007; Hoyles et al, 2000); the need to take time to practice skills before full competence is reached (Farrand et al, 2006; Knight, 1998:

- Definitions of competence which define up to four possible levels from “novice” to “expert”, starting from the final level of fitness to practice unsupervised and working downwards to a beginner (Benner, 1984 as cited in English, 1993; English, 1993; Graham, 2005; NMC, 2004; QAA, 2005)
- There is still no clear definition of competence within the clinical skills area used by all (Watson et al, 2001)
- This has led to Higher Education institutions working out their own definitions and levels (Napier University, 2004)

The hospitality curriculum

The hospitality curriculum in higher education has not been under the same scrutiny for competence as that of nursing, presumably because there is no need to prove “fitness for practice” as there is in nursing and related professions (Mulcahy, 1999). In fact, “The hospitality business is one of the easiest sectors to enter without any formal qualifications” (Forum Commercial, 2009). Springboard UK, the careers advisors for the industry, state that

“There are three main ways to enter the Hospitality, Leisure and Travel & Tourism industry...

- Getting a job
- Becoming a trainee
- Getting qualified”

(Springboard, 2009)

The Hospitality Training Foundation (HTF) (2002, as cited in Littlejohn & Watson, 2004) states that only 4.9% of employees in the UK hospitality sector possess degrees. Springboard (2009) found that 25% employers in the hospitality industry have recruited graduates, mainly for front-of house, supervisory and management roles (Wiseman & Dent, 2006 p. 94). It can be seen that unlike many other professions, there are no qualifications barriers for entry into the hospitality industry, even at management or ownership level, and indeed many current senior managers entered the industry through in-house training schemes with no formal qualifications,

and therefore received “hands-on” training not obviously related to a theoretical framework (Guerrier & Lockwood, 1989; Ruddy, 1989). However there are more recent arguments that a professional qualification is imperative given the increased size, complexity and sophistication of the industry (Gamble & Messenger, 1994; Ingram, 1999; Ladkin, 2000; Rimmington, 1999). These issues are fully discussed by Harper, Brown and Irvine (2005) who concluded that formal management qualifications were essential to success in today’s industry.

Having established that formal qualifications would appear to be at least desirable if not essential in order to have a successful career in hospitality management, the debate then commences regarding the content, teaching and learning strategies, structure and timing of such qualifications.

Regarding the content, the main issues seem to be surrounding the links between the hospitality management curriculum and that of general business management (Rimmington, 1999); between the study of hospitality as a subject in its own right with no particular pre-vocational emphasis (Morrison & O’Gorman, 2008); between hospitality management and the related studies of tourism, leisure and events (Rimmington, 1999), and between hospitality management and the “fitness to practice” in a first industry job on graduation (Busby & Fiedel, 2001). Lashley (2004 as cited in Alexander, 2007) refers to the industry’s wishes for “cup-a-soup managers”, i.e. they are instant and ready to go – just add water! (However, this is exactly the approach taken by nursing as nursing graduates have to be immediately ready to take up a post as a staff nurse after registration, but no-one talks of “cup-a-soup” nurses!). There is also a body of thought, mainly found in the industry, which considers hospitality management to be “special” and not aligned with any other type of management study (Baum, 1988; Ingram, 1999). Perhaps it is a sign of the “coming-of-age” of hospitality management as an academic subject that has prompted these debates (Morrison & O’Gorman, 2008 p. 216), though there may be less altruistic reasons as universities seek to retain hospitality management as a subject whilst not being willing or able to provide the practical training facilities that were once so prevalent (Alexander, 2007; Baker, Cattet & Riley, 1995). This is

paralleled by the development of tourism courses (Christie-Mill, 1979) which have similar issues regarding content and their relationship to the industry; it is significant that currently many more universities are offering tourism courses which are more theoretical in nature, than hospitality courses. Government and its agencies (QAA, 2008), industry (Wiseman & Dent, 2004), academia (Baum, 2002, 2006; Gamble & Messenger, 1990, 1994; Harper et al, 2005; Ingram, 1999; Littlejohn & Watson, 2004; Morrison & O’Gorman, 2008; Mullins & Davies, 1991; Rimmington, 1999) and professional bodies (Powell & Wood, 1999) have all had their say in this debate which continues currently.

An excellent summary of the development of hospitality higher education and its current position is provided by Airey and Tribe (2000). Correctly describing the curricula of most hospitality programmes as being “vocational action” (Airey & Tribe, 2000 p. 277), they concede that this is what may have given these programmes their credibility with many stakeholders, not least the industry; however, they wonder if it is these very attributes which prevent hospitality programmes progressing into a more liberal and reflective view of the subject. However, if one accepts Tribe’s (1999 as cited in Airey & Tribe, 2000) theory of curriculum space then the issue of what could be included in a higher education hospitality curriculum is immense and the space and time limited; curriculum developers have perhaps naturally tended to focus on those aspects that will lead to maximum employability to the possible detriment of other fascinating but less immediately useful aspects. The hospitality industry and those who prepare students to enter it seem to broadly agree with the view that the curriculum is “a body of knowledge and a suite of skills that students need to know under the heading (hospitality)” (Fraser & Bosanquet, 2006 p.273). This action-orientated curriculum may also owe its continued existence to some extent due to the learning preferences of many hospitality students (Lashley & Barron, 2006) which are discussed below.

There have been attempts to produce a common curriculum (Harris, 1997) and this is also true for the related tourism and leisure management curricula (Pitchford & Bacon, 2005) but the wide range of job opportunities and the fragmented nature of

these industries make it difficult to find agreement on a common curriculum. Also, given the current economic climate in which HE institutions operate in which they need to compete for students and research funding at home and internationally, the drive for communality is not as strong as it was. However, several writers have contributed interesting theories about what should be included in the hospitality curriculum.

Mullins and Davies (1991) produced a model of the attributes of a manager (Mullins & Davies, 1991 p. 23) which includes technical competence, social and human skills, and conceptual ability. As a manager moves up in the organisational hierarchy, the technical skills become less important and the conceptual ability more important. Ingram (1999) also produced a model called “the hospitality cycle of practice” (Ingram, 1999 p. 140) which refers to several studies on the characteristics of a hotel manager and includes vocational education and training, practice and operations and the search for theoretical paradigms as being of equal importance and mutually dependent on and informing each other. Barron, Maxwell, Broadbridge and Ogden (2007 p. 123) emphasise the importance of people skills in a hospitality management career; this relates to the need to include skills from the affective domain. Baum (2006), building on earlier writing on a similar theme, (Baum, 1996; Baum, 2002), discussing how hospitality skills can be seen as of little value, argues that a hospitality manager actually needs a whole bundle of skills, which include technical practical skills, but also many other attributes including generic management skills, and emotional and aesthetic attributes (Baum, 2006 p.125). Gamble and Messenger (1990, 1994) discuss the difficulty of successfully analysing hospitality work in order to inform the curriculum as it is so variable according to setting, flexible as to job and style, difficult to maintain commitment of stakeholders and management behaviour itself (Gamble & Messenger, 1994 p. 13). It will be noticed that the above models include references to technical competence and practice, an issue which will be discussed in more detail below.

Not surprisingly given the debate on the curriculum briefly outlined above, much has also been written about the teaching and learning strategies that should be employed

when teaching hospitality management students. There is debate about the suitable depth of learning (deVries & Downie, 2000) and the use of business games and simulations (Edelheim & Veda, 2007) but the most relevant arguments to this thesis concern the learning styles of hospitality management students. Lashley and Barron (2006) confirmed through their research what most experienced hospitality lecturers suspected, that the preferred learning style (Honey & Mumford, 1986, 2000 as cited in Lashley & Barron, 2006) of most western hospitality management students was very strongly the Activist approach (Lashley & Barron, 2006 p.559), a finding which also confirmed the similar results of Lashley's previous study (Lashley, 1999 as cited in Lashley & Barron, 2006). Although it is the place of education to assist in producing all-round learners, so encouraging these learners to develop more reflective and theoretical aspects to their learning is important, it is nevertheless significant that most western students on this type of programme preferred an activist approach, i.e. learning by doing. Duncan, Lyons and Al-Nakeeb (2007), researching learning in sports and exercise bio-mechanics, found their students to have similar preferences; "You have to do it rather than be in a class and just listening." (Duncan et al, 2007 p. 71). This activist approach to learning will also be important in the discussion concerning practical skills training below.

Regarding the structure, the main debate here is the inclusion or not of a work experience or placement element, how long this should be and where in the curriculum it should be placed. Most writers agree that a period of work-based learning is essential in most vocational courses including hospitality management (Alexander, 2007; Hager, 2004; Hyland, 2001); a view heartily endorsed by the industry and the professional body (Rimmington, 1999) and appreciated by students themselves provided the placement is a positive experience (Harper et al, 2005). The placing of learning operational and strategic management is also questioned (Rimmington, 1999).

The timing of hospitality management qualifications is another issue. Presently, most would fit under the pre-vocational education banner, although some development qualifications have existed, mainly provided by the professional body (Rimmington,

1999). The industry, however, is keen that even managers enter the industry “fit for practice”, i.e., they have received enough specific training to be immediately useful in their first job in the industry, and this includes practical food and beverage, reception and accommodation servicing skills (Alexander, 2007). This is particularly relevant when considering the nature of the hospitality industry which contains many small businesses where every staff member has to be capable of undertaking many tasks, and where the business is small it is unlikely to be able to afford to send its employees on training courses as the business can afford neither the time out for the employee nor the money (Wiseman & Dent, 2006).

The place of practical psychomotor skills training in the hospitality curriculum

However, the most important issue for this thesis, and the issue which has sparked the most heated debate, is that concerning practical psychomotor skills training, usually mainly in food and beverage skills. Traditionally, the route through food and beverage preparation and service through to food and beverage management was the most likely route for those aspiring to be general managers (Guerrier & Lockwood, 1989; Ladkin, 2000; Ruddy, 1989). This implies that those entering the industry with whatever qualifications would need to be competent in the technical skills required for these areas (Rimington, 1999). Also, employers in the hospitality industry have traditionally placed a high value on practical psychomotor skills, particularly in the food and beverage area (Powell & Wood, 1999 p. 138). Because of this, universities and other institutions offering higher education in hospitality management have included these technical skills in their curricula (Alexander, 2007; Baker et al, 1995; Littlejohn & Watson, 2004). Due to the decrease in student numbers and the frequent alignment of hospitality management alongside other subjects not requiring this practical training (business, management, tourism, leisure) institutions have sought to reduce, eliminate, outsource or provide other solutions to practical training (Alexander, 2007; Morrison & O’Gorman, 2008). This has not met with approval from industry. Some writers, however, question the use of, or need for such training on more philosophical grounds and argue that the training is outdated (Alexander, 2007; Rimington, 1999), unnecessary for all studying hospitality (Morrison &

O’Gorman, 2008) and furthermore may reduce the resources available to study more generic management skills which, it is argued, the hospitality industry needs even more (Baum, 1988). Davis (1989) points out that students studying on a hospitality management programme need to have understanding and some practical ability in kitchen skills but these students rarely go into posts where they will be using these every day and therefore maybe a different approach is needed to teaching these on such programmes.

To summarise the debate about the hospitality curriculum and the place of practical psychomotor skills:

- The move of hospitality management education into higher education has brought about a reduction in the importance of practical psychomotor skills (Alexander, 2007; Morrison & O’Gorman, 2008)
- This on the whole has made these programmes easier to retain and maintain in the current HE climate (Alexander, 2007; Morrison & O’Gorman, 2008)
- However, this could have an impact on graduate recruitment by the industry and a possible impact on graduate’s career development (Guerrier & Lockwood, 1989; Ladkin, 2000; Rimmington, 1999; Ruddy, 1989)
- An active, practical approach would suit the needs of the majority of learners in western institutions (Lashley & Barron, 2006)
- An element of work-based learning or placement is valued by the institution, the professional body, industry and students provided the experience is a positive one (Alexander, 2007; Hager, 2004; Hyland, 2001; Rimmington, 1999)
- Qualifications are not highly valued by the hospitality industry and can be seen by them as too academic and theoretical and not relevant (Forum Commercial, 2009; Littlejohn & Watson, 2004; Springboard, 2009; Wiseman & Dent, 2006)
- Those institutions offering hospitality management within higher education need to balance the theoretical management knowledge and skills with the practical psychomotor skills that will enable graduates to more easily find a place on the career ladder, particularly in small and medium enterprises (Alexander, 2007; Littlejohn & Watson, 2004; Rimmington, 1999)

It is possible that in the past too much emphasis was put on practical psychomotor skills, particularly in food and beverage. However, it is also possible that hospitality management has made the same mistake as nursing when it first moved into higher education, in that by reducing the amount of practical training graduates have not felt competent and confident to practice and this may have reduced their first job opportunities and possibly further career development as well. However, higher education institutions have succeeded in giving graduates in hospitality management a solid foundation in generic management skills which should be of assistance in their career.

The answer would seem to be a programme which has a balance of theoretical and practical elements, is up-to-date and relevant to industry, that suits a range of learning styles, includes a period of work-based learning and produces graduates who are ready for their first and subsequent jobs in the industry (Littlejohn & Watson, 2004). How could this be achieved? Alexander (2007) puts forward some examples of how institutions have gone about this. Baum (2006) looks at the “experience economy” and argues convincingly that several types of skill are now essential in the hospitality industry: technical, generic, emotional and aesthetic (Baum, 2006 p. 125). It is the purpose of this study to examine one of the areas which might make such a curriculum more possible, that is the ability to assign levels to practical skills units so that their place in the curriculum can be more easily justified and more meaningful assessments used.

Summary and interim conclusions

It can be seen from the discussion above that taxonomies of psychomotor skills do exist in various forms in subject areas such as music, ballet and nursing, even though these are not based on any clear articulation in generic level descriptors. However, no overt taxonomy has been developed for psychomotor skills within the hospitality curriculum. So, what is the basis for these taxonomies? How have they been developed, and on what research are they based? Is there common ground on

which some more generic descriptors could be based that would apply to psychomotor skills across a range of subjects within vocational education?

The review of current literature and practice, the examination of possible characteristics and of the theories behind skill development may give some insight into criteria which could be included in level descriptors of psychomotor skills.

These could be grouped under various headings:

- Physical criteria, which could include accuracy (Green, 1997; Hannah & Michaelis, 1977), reliability (accurate every time) and speed (Gagné & Driscoll, 1988; Hannah & Michaelis, 1977; Minton, 1997), correct use of specialised equipment and technology (SCQF, 2001)
- Autonomy i.e. are confident to practice without supervision (although it must be remembered that many experts still seek guidance e.g. many musical performers continue to have teachers, sports professionals have coaches and professional dancers still take class from a teacher every day) (Hannah & Michaelis, 1977; Hilton & Pollard, 2005)
- Underpinning knowledge of what they are doing and why, including ethical practice (Graham, 2005; Hoyles et al, 2000; Kneebone & ApSimon, 2001; Mullins & Davis, 1991)
- Aware of affective aspects i.e. effects on other people or emotional dimensions of work (Baum, 2006; Napier University, 2004)
- Ability to reflect on own performance and improve (Lashley, 1999 as cited in Lashley & Barron, 2006; Lashley & Barron, 2006; Napier University, 2004; Tribe, 2002)
- Ability to combine a range of complex psychomotor skills (Hannah & Michaelis, 1977)

- Ability to combine these with other domains i.e. cognitive, affective and reflective (Claxton et al, 2010; Hill et al, 1997; Miller, Imrie & Cox, 1998; Mullins & Davis, 1991; Ryle, 1949).

These possible criteria will be investigated in the primary research undertaken for this study.

Chapter 4: Designing the Study.

The nature of the study and research questions

As stated in Chapter 1, this study is primarily of an exploratory nature, aiming to investigate and illuminate the issues surrounding the possible criteria which could be used to distinguish between different levels of psychomotor skills, and how these different levels might be made explicit. This in turn would inform the teaching, learning and assessment of these skills. The research questions are, therefore:

To investigate the place of psychomotor skills with vocational education curricula and how these are viewed by different bodies

To explore the criteria that might indicate a clear progression in psychomotor skills from one level of learning to the next

To explore ways in which such criteria might be made explicit through being described in learning outcomes: or, if not, of being codified by some other means

To consider the implications of the above for the teaching and assessment of psychomotor skills in vocational education.

As this is a relatively unexplored area of study, there was no one methodology which could be easily adopted for the purpose of the study. This chapter therefore explains the methodology behind the study and the actual methods which were eventually adopted.

Factors influencing research design

Although the possible implications from the outcome of this study could be far-ranging, it would not be possible to undertake a very large study as part of an EdD thesis due to practical constraints and the requirements of the thesis process.

It was therefore decided that any major primary research would take place within Scotland, and within the author's own subject area, hospitality. This would allow for contacts amongst teachers of practical psychomotor skills to be utilised, and also the author's own knowledge and experience would assist in the interpretation of the findings. As the teaching of practical psychomotor skills is less within university hospitality programmes, it was decided instead to use the Scottish Qualification Authority (SQA) HNUs as the basis for the major primary research. These have the advantage of already being levelled at SCQF levels 7 and 8, equivalent to years 1 and 2 of a Scottish degree programme, and also of being taught widely throughout FE colleges in Scotland.

It was also considered essential to look at how taxonomies of psychomotor skills had developed in other areas, such as music and ballet, and how these had been levelled in England by the QCA. This could inform how the process could then be applied to other skills sets such as practical kitchen skills in hospitality and clinical skills in nursing. The scope and importance of practical psychomotor skills would also need to be established.

Theoretical perspective

This study was undertaken with the view that "the richest sustained ontological and epistemological fit with the problem area being investigated" (Hollinshead, 2004 p. 63) was the most practical perspective to adopt. Flyvbjerg (2006, p. 242) agrees that good social science is problem-driven and not methodology-driven in the sense that "it employs those methods which for a given problematic best help answer the research questions in hand". It was therefore decided that to adopt the methodological stance that would be the most likely to provide the best answers to the research questions, rather than having a preference to pursue a particular methodology.

This led towards an ontological and epistemological position of social constructivism, which views all knowledge as being ‘constructed’, subject to human perception (Crotty, 1998 as cited in Marr, 2008). As the study was exploring how psychomotor skills are learnt, taught and assessed, and how they might best be differentiated, this would seem to be knowledge which was being constructed by the participants and was therefore the most appropriate view. This in turn led towards the use of qualitative methods which would allow for the interpretation of rich and varied data and the possibility of finding patterns amongst the data collected. As Stake (1995 p. 99) noted, “Most contemporary qualitative researchers nourish the belief that knowledge is constructed rather than discovered.” However, before any primary research was conducted an extensive literature review was undertaken which yielded several possible criteria for describing and differentiating psychomotor skills at different levels. It was therefore decided that although primarily inductive methods would be used there would also be an element of deduction as evidence was sought as to whether these criteria could indeed be found in the study. According to Creswell (2009 p. 66) “Theory used in mixed methods may include theory deductively in quantitative theory testing and verification, or inductively as in an emerging qualitative theory or pattern.” This view is echoed by Stake (1995 p. 44) “All research is a search for patterns, for consistencies.” Pattern theory is discussed in more detail later in this chapter.

However, this approach did not mean that the research would search only for evidence of these criteria, but was also open to the possibility that other criteria might exist which had not yet been identified. As Creswell (2009 p. 49) states: “In other qualitative studies, (theory) comes at the beginning and provides a lens that shapes what is looked at and the questions asked.” So, in this study, the review of the literature provides a basis of theory which can be investigated by means of the other methods. Creswell (2009 p. 65) reiterates that “Consistent with the emerging design of qualitative inquiry, the theory may appear at the beginning and be modified or adjusted based on participant views”. This is the stance adopted here.

As stated above, it was therefore decided to employ qualitative methods in the study. Gillham (2000 p. 11) states that “Qualitative Methods enable you...to carry out research into the *processes* leading to the results...rather than the ‘significance’ of the results themselves” and it is this process with which this research is engaged.

However, the range of the study was such that it was unlikely that all the research questions could be answered by one piece of empirical research utilising only one method. This led towards the possibility of using a case study approach; as Gillham (2000 pp.1&2) describes: “No one kind or source of evidence is likely to be sufficient (or sufficiently valid) on its own. This use of multiple sources of evidence, each with its own strengths and weaknesses, is a key characteristic of case study research”. Additionally, the subject matter of the study was considered suitable for a case study approach: as Stake (1995 p. 17) explains: “Issues are not simple and clean, but intricately wired to political, social, historical, and especially personal contexts.” “Issues can be good research questions for organizing a case study”.

Case Study Method

Yin (2009 p. 32) says a case study can be chosen as a real-life case to represent the abstraction, and that is the method adopted here. Yin (2009 p. 13) also says that a case study is a suitable method when “a ‘how’ or ‘why’ question is being asked about “a contemporary set of events over which the investigator has little or no control.” As it was hoped to gather evidence of how psychomotor skills were learnt and improved over a period of time the researcher did not wish to control events but observe and record them as they occurred. On other words, an *in situ* study was required as described by Baszanger and Dodier (2004 p.11) “In methodological terms, a study can be described as *in situ* if it allows each subject to behave in an endogenous manner: that is, one that is not influenced by the study arrangements.” Stake (1995 p. 41) describes this as a situation where “...conditions are not known in advance or controlled. Even the independent variables are expected to develop in unexpected ways.”

Yin (2009 p.18) describes the case study method as “an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context.” He goes on to identify three types of case study: explanatory, descriptive and exploratory (Yin, 2009 p. 21). This case study is designed to be primarily exploratory, though there may be some explanatory elements.

As stated above, it was considered unlikely that one research method could be used to collect all the data required to answer the research questions. This led the researcher towards a mixed-methods case study approach (Yin, 2009 p. 63), an approach which “seeks a range of different kinds of evidence...which has to be abstracted and collated to get the best possible answers to the research question.” (Gillham, 2000 pp. 1-2). Creswell (2009 p. 13) describes this kind of case study as

“a strategy of inquiry in which the researcher explores in depth a program, event, activity, process or one or more individuals. Cases are bounded by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time (Stake, 1995).”

It was decided primarily to follow Yin’s (2009) approach to case study research as this was the best fit with the subject matter to be studied, although the views of other authors were consulted. In Yin’s (2009) view, a case study is characterised as follows:

“The case study inquiry

- copes with the technically distinctive situation in which there will be many more variables of interest than data points, and one result”
- relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result
- benefits from the prior development of theoretical propositions to guide data collection and analysis.”

(Yin, 2009 p.18)

The theoretical proposition here is that possible criteria for describing and differentiating levels of psycho-motor skills exist and have been tentatively identified

from the literature. These will be investigated in the empirical study whilst the researcher will also be open to other criteria which may emerge.

No examples could be found of a case study approach to the process of learning; possibly because most studies have focused on the cognitive aspects of learning, which is more readily quantifiable and for which established tests exist, and not on the learning of psychomotor skills. Likewise, many of the case studies available for study were more sociological in subject matter and were concerned primarily with the interaction between people and within organisations. To a certain extent, therefore, the use of the case study method for this particular type of study had few precedents.

Methods used as part of the mixed methods single case study approach

It is useful here to discuss briefly the various methods which were incorporated into the mixed-methods case study design.

Firstly, the scope of the study needed to be established. Although the possible implications of the study would be far-ranging, it would be impossible to investigate in the depth required across a wide range of skills. It was therefore decided to identify the scope of the study using learning outcomes from the range of Higher National Units (HNUs) available from the SQA. These had the advantages of being freely available on the internet, had already been levelled at SCQF levels 7 and 8, and could thus be equated to the SCQF Framework, and are offered by a range of Further and Higher Education institutions across Scotland.

It was also considered important to relate any findings to professional practice, both because of the very nature of an EdD thesis but also because it was the lack of the availability of professional guidance in this area which gave rise to the study in the first instance. Bassey's (1999 p. 49) model

“suggests that the role of educational research is to inform professional discourse, and to be informed by it...It should be something that teacher and policy-makers read about, argue over, reflect on and then either reject or forget, or file away in their memory to adapt and adopt later.”

(Bassey, 1999 p. 51).

This implied investigation of the ways in which psychomotor skills were given prominence or otherwise in quality documents and governments papers, and also gathering the views of those who were responsible for teaching and assessing psychomotor skills and of those who were involved in the processes of aligning certain skills with levels (which has already taken place in England for some subjects within the QCA Framework). This led the investigation towards the use of documentary analysis of the quality documents. The government papers were included in the literature review. Additionally, in order to seek the views of those involved in the professional practices outlined above, it was decided to undertake some semi-structured interviews with key teachers, representatives of professional bodies who have a psychomotor taxonomy in place (such as the RAD and ABRSM), and of a representative of the QCA to explore the process of assigning psychomotor skills to levels on a framework.

In order to identify possible criteria which could be used to distinguish between one level of psychomotor skills and another, an extensive review of the literature was undertaken in Chapters 2 and 3. This led to a list of possible criteria which were then explored through an observation study of “novices” (Benner, 1984 as cited in English, 1993) in kitchen practice as they learnt knife skills for the first time as part of an HNU. The college chosen for the study is widely considered to be at the forefront of the teaching of kitchen skills in Scotland having until very recently been a specialist college. In addition, the researcher had previously worked with the college on national initiatives and therefore was known to the staff. Stake (1995 p. 4) states “Our time and access to field work are almost always limited. If we can, we need to pick cases that are easy to get to and hospitable to our inquiry...” and this was the case here.

The novices were observed at their weekly class over a period of 11 weeks and these were recorded on video for later analysis. The criteria were further explored through the observation of two “experts” and through the semi-structured interviews with professionals. Finally, ways of making these criteria explicit were explored through both the semi-structured interviews and the documentary analysis.

Yin (2009 p. 102) lists six sources of evidence: documentation, archival records, interviews, direct observation, participant observation and physical artefacts. This study utilises three of these; documentation, interviews and direct observation. The table below outlines the main strengths and weaknesses of these three methods:

Source of evidence	Strengths	Weaknesses
Documentation	<ul style="list-style-type: none"> ▪ Stable – can be reviewed repeatedly ▪ Unobtrusive – not created as a result of the case study ▪ Broad coverage – long span of time, many events, many settings 	<ul style="list-style-type: none"> ▪ Retrievability – can be difficult to find ▪ Biased selectivity, if collection is incomplete ▪ Access – may be deliberately withheld
Interviews	<ul style="list-style-type: none"> ▪ Targeted – focuses directly on case study topics ▪ Insightful- provides perceived causal inferences and explanations 	<ul style="list-style-type: none"> ▪ Bias due to poorly articulated questions ▪ Response bias ▪ Inaccuracies due to poor recall ▪ Reflexivity – interviewee gives what interviewer wants to hear
Direct observations	<ul style="list-style-type: none"> ▪ Reality – covers events in real time ▪ Contextual – covers context of “case” 	<ul style="list-style-type: none"> ▪ Time-consuming ▪ Selectivity – broad coverage difficult without a team of observers ▪ Reflexivity – event may proceed differently because it is being observed ▪ Cost – hours needed by human observers

Source: Adapted from Yin (2009 p. 102)

Bassey (1999 p. 81) agrees: “There are three major methods of collecting research data: asking questions..., observing events...and reading documents.” Gillham (2000 p. 13) explains that “Case Study is a *main* method. Data accumulated by different methods but bearing on the same issues are part of what is called the *multi-method* approach”; this is the approach taken by this study. Stake (1995 p. 66) also notes the different strengths and weaknesses of observation and interviews:

“Note how different are the field observation and the interview, although both are used to find out what happened. What is observed is not usually controlled by the researchers, they go to where the things are happening, with the hope that as they would have happened had the researchers not been there. What is covered in the interview is targeted and influenced by the interviewers.”

The level titles on which to base the exploratory research were based on Benner’s (1984 as cited in English, 1993) model of skills acquisition, which identifies five stages in skills progression: novice, advanced beginner, competent, proficient and expert. The phenomenon to be observed is the students learning knife skills in the kitchen, beginning as novices and progressing to advanced beginners, but the context is the criteria which might be used to describe the distinctions between levels for psychomotor skills in vocational HE generally. Additionally, it is intended to observe and analyse the expert level for knife skills. The context will be further explored through semi-structured interviews with key hospitality teachers and representatives of the RAD, ABRSM and QCA.

By the use of multiple methods of data collection it was hoped to identify some patterns in the data which would point to the likelihood or not of the possible criteria identified through the literature as being suitable for use in describing and differentiating between levels of psychomotor skills. Creswell (2009 p. 64) states

“The development of theories and categories into patterns, theories or generalizations suggests varied end points for qualitative studies. For example, in case study research, Stake (1995) refers to an assertion as a *propositional generalization* – the researcher’s summary of interpretations and claims – to which is added the researcher’s own personal experiences. Lincoln & Guba (1985) refer to ‘pattern theories’ as explanations that develop during...qualitative research...these pattern theories or generalizations represent interconnected thoughts or parts linked to a whole.”

Creswell continues to cite Neumann (2000 p. 38 as cited by Creswell, 2009 p.64):

“Pattern theory does not emphasize deductive reasoning. Like causal theory, it contains an interconnected set of concepts and relationships, but it does not require causal statements. Instead, pattern theory uses metaphor or analogies so that relationship ‘makes sense’. Pattern theories are systems of ideas that inform. The concepts and relations within them form a mutually reinforcing, closed system. They specify a sequence of phases or link parts to a whole.”

The format of the reporting of the case study also follows the suggestions of Yin (2009 p. 176) where he suggests the linear-analytical structure of report is the most suitable for a thesis and for all three types of case study. Yin (2009 p. 141) also suggests the use of explanation building as an analytical technique in itself. Bassey (1999 p. 89) states

“The essential feature of any research report is that it makes a claim to knowledge....A claim to knowledge may:

- contribute incrementally to the accumulated knowledge of the topic under study;
- challenge existing theoretical ideas;
- offer significant improvements to existing practice;
- give new insights into policy;
- introduce a new method of potential power;
- provide a ‘significant piece in the jigsaw of understanding’;
- bring together disparate findings and integrate them into a new theoretical structure.”

It is hoped that this study will at least contribute incrementally to the accumulated knowledge of the topic under study.

Database of evidence

In order to keep track of the data, Yin’s (2009) suggestion of a separate database of evidence was adopted to increase reliability (Yin, 2009 p.119). This suggestion was adopted in this study and the database established before the analysis stage. This database can be seen at Appendix IX.

Ethical considerations

Yin (2009 p. 73) states “you are responsible for conducting your case study with special care and sensitivity... (this) usually involves *gaining informed consent* ...” In the observation, all students had the purpose of the research explained to them and each signed a form giving permission to be filmed for the purposes of academic study. All students filmed were over 18 years of age. In addition, in the field notes and analysis, students were not referred to by name but as Novice 1, 2 etc. which Yin (2009 p. 73) recommends in order that the researcher is “protecting the *privacy and confidentiality* of those who participate...”

Validity, reliability, generalisability

The case study method has its detractors and, as all methods have, some disadvantages. In order to make it as rigorous as possible, an extensive literature review was undertaken as a first step, as recommended by Yin (2009 p.3).

The main criticism of the case study method is that it is seen as less rigorous and objective than the positivist quantitative approach (Flyvbjerg, 2006; Yin, 2009). In fact, Yin (2009 p. 3) states “...you should understand and openly acknowledge the strengths and limitations of case study research.” Yin (2009 p. 40) identifies four tests to establish the quality of research design; construct validity, internal validity, external validity and reliability; these will now be discussed.

Construct validity

The literature review undertaken as part of this study was deliberately very wide in nature, looking at how the development of psychomotor skills were regarded by authors from many disciplines such as hospitality, nursing, medicine, music and sport. From this literature search, a range of possible criteria for were identified. These were then used as the basis for analysis of the observation data, whilst bearing in mind that other criteria might occur which had not been identified from the

literature. These criteria will be further explored through the semi-structured interviews. It is hoped that this approach would assist with construct validity in this case.

Internal validity

Internal validity is concerned with the accuracy of the data to be analysed and its dependability and confirmability (Cohen, Manion & Morrison, 2000). It was decided to maximise internal validity by using video recordings of the observation data, which would accurately record the psychomotor skill being used and which could be viewed many times to check interpretation, both by the researcher and a colleague. Validity was also increased by using learning included within standard HNU's which are nationally validated by the SQA and in used throughout Scotland. It was also intended that validity would be improved by the use of multiple sources of data, where the findings of one of the methods could be compared with those of another. The observation was also prolonged and persistent (Lincoln & Guba, 1985 p. 302) as although a very small sample was used, the observation was carried out weekly for a period of eleven weeks of a three hour class. Patton (2002 p. 244) confirms that "there are no rules for sample size in qualitative inquiry" and that in-depth information can be more important than breadth in this kind of study. As the study is exploratory in nature, the sample size is of less importance than in more explanatory studies and future research with other samples could be carried out at a later date.

External validity

One of the potential weaknesses of the case study method is its possible lack of external validity, i.e. the extent to which the findings in the one chosen case can be held to be true in other cases. Stake (1995 p. 7) discusses the difficulties of generalising from case studies, but says if certain activities or problems keep reoccurring, then certain generalisations may be drawn. "Seldom is an entirely new understanding reached but refinement of understanding is." Generalisations may also be modified by case study research. In this study, it is hoped that generalisation will

be increased by both the fact that potential criteria had already been identified from a large range of literature, and also that these criteria will be further explored in interviews with examining and awarding bodies in other subject areas. Ideally, future research could take place which would search for similar criteria within another skills set e.g. clinical skills in nursing. However, even if the results are not in themselves generalisable, at least a greater degree of understanding will have been reached. Because of the in-depth nature of the study, it is hoped that rich data will be provided (Lincoln & Guba, 1985 p. 316) which could be used by other researchers to test transferability onto other skills sets.

Because of time constraints, it was not possible to do an in depth analysis of every psychomotor skill sampled in the videoed observation data for the purposes of this thesis. Instead, the researcher chose to focus on knife skills only as these are more easily identifiable than some others which were observed. Stake (1995 p. 84) says that “It is also important to spend the best analytical time on the best data. Full coverage is impossible, equal attention to all data is not a civil right. The case and the key issues need to be kept in focus.” The same skills were then selected for observation in the expert study for comparison. Also, as the observed footage is of novices with no previous experience of psychomotor skills in kitchen practice, knife skills are one of the most fundamental, are taught progressively from the very beginning and will underpin more complex work which will be learnt later in the programme. As the aim of the research was to explore a means of describing and differentiating levels of psychomotor skills, it was hoped that this particular skills set would be representative enough to demonstrate whether or clear criteria for progression were evident. This would be particularly evident in a comparison between Week 1 and Week 11 Novice classes.

“For qualitative, naturalistic research, a fundamental premise is that the researcher does not try to manipulate variable or conditions, that the situations in the research occur naturally (Cohen et al, 2000 p.110). In this study, the researcher’s observations took place over a period of eleven weeks in a timetabled class for an HNU which was not modified in any way from normal practice. The only modification made (at

the host lecturer's suggestion) was to ensure that four complete beginners (novices) were put together at one station for ease of video observation. Other than this, the class was taught as normal and the researcher merely observed with no participation other than a brief explanation as to the purpose of the research in the first class, and the signing of consent forms by those being videoed. In this way, it was hoped that ecological validity was achieved.

Catalytic validity underpins the very purpose of this research, in the sense that it is hoped this study might provide the start of a process of building a taxonomy of psychomotor skills which could be used in further and higher education across a range of subjects. This would improve the lives of students, lecturers, curriculum developers and awarding and examining bodies concerned with vocational education as it would give them a means of describing and making explicit the psychomotor skills at different levels which are an essential component of many vocational programmes. This in turn could lead to greater parity of esteem with more academic subjects as the practical aspects of vocational provision would have their own "language" comparable with that used for cognitive progression. Although this small study cannot hope to achieve this in itself, it is hoped that future research will build on this study so that this aim can be achieved.

Criterion-rated validity is built into the design of this study by the use of several different instruments of data collection; novice observation, expert observation, semi-structured interviews and documentary analysis. It is hoped that this will contribute towards concurrent validity, a form of criterion-rated validity. This research design will also contribute to triangulation, which will be discussed next.

Triangulation

In this study, two methods of triangulation are proposed. Firstly, data triangulation is used, where several different sets of data are used to investigate the same phenomenon. Secondly, sets of data have been obtained by using different methods; this is methodological triangulation. This has already been alluded to above. Yin

(2009 p. 115) states that “the most important advantage presented by using multiple sources of evidence is the development of converging lines of inquiry”. Likewise, Gillham (2000 p. 13) says that “If (*the different methods*) converge...then we can be reasonably confident that we are getting a true picture.” Walker (1990 p. 70) talks of a “triad of data” in which steps such as observation, interviews and documents can be used to study the same problem from different angles and this makes “the whole ...stronger than the sum of the parts” (Walker, 1990 p. 71).

Reliability

Reliability in qualitative methodology is less well-defined than in quantitative methodology. Cohen et al (2000 p. 119) say that “in qualitative research reliability can be regarded as a fit between what researchers record as data and what actually occurs in the natural setting that is being researched”. The data were recorded as accurately as possible using video-recording for the novice and expert observation studies and audio-recording for the interviews. The interviews were semi-structured so that replies to questions could be compared. However, all the data are open to interpretation by the researcher. The use of a theoretical framework formulated from the literature should assist in guiding the interpretation however.

Observation

Observation is often part of a mixed or multi-method approach (Gillham, 2000 p.48). Stake (1995 p. 41) states that “ Standard qualitative designs call for the persons most responsible for interpretations to be in the field, making observations, exercising subjective judgement, analyzing and synthesizing, all the while realizing their own consciousness.”

Baszanger and Dodier (2004 p.10) state that observation is required when “...the phenomena studied cannot be deduced but require empirical observation”. In this study, it was considered imperative to collect empirical data which could show the progression within the learning of psychomotor skills from one level to another. Only

by collecting this data would it be possible to observe if the possible criteria identified from the literature were indeed evident. Stake (1995 p. 60) also agrees that “Observations work the researcher towards greater understanding of the case.”

Observation can be overt or covert (Maykut & Morehouse, 1994); in this case an overt approach was taken though with minimum disruption to the participants. Stake (1995 p. 55) “videotapes make wonderful records that can be analyzed (at great labor) by the researcher for aggregative interpretation...” In this case the pilot study, novice observation study and expert observation study were all recorded using a video camera and the data later transferred to DVD format to aid analysis. As Bell (2001 p. 15) states “Visual content analysis usually isolates...sequences of representation”. “Categories of (visual) content must be explicitly and unambiguously defined and employed consistently (‘reliably’) to yield meaningful evidence relevant to an hypothesis.” In this study the analysis of content was limited to movements concerned with knife skills and initial categories were based on the possible criteria identified from the literature. Bell (2001 p. 13) gives this definition: “content analysis is an empirical (observational) and objective procedure for quantifying ‘audio-visual’ (including verbal) representation using reliable, explicitly defined categories (‘values’ on independent ‘variables’)”.

Much of the literature on observation studies is based on behavioural or ethnographic studies and so is of only limited application to this study. In spite of the primary focus of the study being exploratory and therefore qualitative in nature, nevertheless when examining appropriate methods of categorising movements it is inevitable that some quantitative measures such as time and speed will be used. As Stake (1995 p. 62) states: “During observation, the quantitative case study researcher keeps focused on categories or key events, attentive to background conditions that may influence subsequent analysis but concentrated on what constitutes a tally.” Hammersley (1993 p. 65) agrees that “it is known that observers are prone to misjudge frequencies of occurrence of events they are watching, unless that use some quantitative scoring; and they are prone to be over-influenced by positive instances and under-influenced by negative instances”. Emmison (2004) discusses whether the

researcher is generating their own images or using those already in existence as this will lead to different types of analysis. In this study, the focus is purely on the skills to be studied so to a certain extent this dictates the type of analysis to be used.

It is also important to focus on what is actually seen and observed rather than looking for hidden meanings. Foucault (1972 p.37) states that “Discursive formation is the way meanings are connected together in a particular discourse”: this can also be applied to visual images. However, Baszanger and Dodier (2004 p.11) state

“This principle of openness to what cannot *a priori* be pre-codified results in the basic tension underlying *in situ* studies. The flexibility required by this openness conflicts with the need to maintain at least a minimum of method in the conduct of the study; that is, a certain guide for the behaviour of both the fieldworker and the people observed, depending on the plan of study. This duality is an implicit part of the general situation of the *in situ* field worker.”

This is a good description of the situation which surrounds the analysis of the observation data; the need to search for evidence of pre-identified criteria whilst still being open to the possibility of others.

The importance of systematic observation and recording are identified by many authors (Birley & Moreland, 1998; Marshall & Rossman, 1999; Reiss, 1971 as cited in Clarke, 1999). Because the data will be primarily concerned with movements, Fassnacht's (1982) types of units of analysis, structural and functional, will be used. Fassnacht (1982) defines structural as meaning patterns of movement, and functional which is the purpose of the series of movements. In this study, the function is the use of knives in the kitchen; it is the structural patterns of movement which will be the object of the analysis. Fassnacht (1982) says that structural observations can be classified by frequency, duration and intensity; this method (Argyle, 1988) can then be used to identify sequences of behaviours composed of these smaller units which will be useful in identifying chains of movement (Gagné, 1966).

Pilot Study

Yin (2009 p. 93) states that “In general, convenience, access and geographical proximity can be the main criteria for selecting a pilot case....” and also that pilot cases “can be used to try different approaches on a trial basis”. In this study, a small pilot study was undertaken at another Scottish FE college in Edinburgh where the researcher had access to HE students who were undertaking the practical kitchen element of their training. The main usefulness of this pilot study was to try different approaches to observing and recording the student activities: the researcher had never used a video camera before and had to learn not only how to operate it but how and where to stand and move to best record the movements (Prosser, 1998 p. 43). On this basis, the pilot study was very successful and the researcher was able to use the techniques learned in the main observation studies. However, it was not as useful as had been hoped in terms of identifying potential codings as the students, being HE Hospitality Management students, were undertaking kitchen practicals more to gain an understanding and appreciation of what is involved rather than having the time to perfect the skills. However, how the class was conducted and taught was very useful and very similar to the main study: just the expectations of the students in terms of expertise were less.

Thus the pilot study was useful for perfecting the techniques of video recording, understanding the organisation and layout of the training kitchen and the activities within it and understanding how a practical lesson is planned and proceeds. It was not, however, possible to observe enough detailed psychomotor movements to assign preliminary codes to these.

Novice observation study

This was carried out over 11 consecutive weeks at a Glasgow college of FE. Four novice students were selected by the researcher and lecturer to be observed and recorded on video. The observation was over 11 weeks of kitchen practicals which formed the basis of an SQA HN Unit. The students were selected as they had no

previous teaching in the subject area and could therefore be classified as novices. The researcher observed and recorded as much of the psychomotor activities of these students as possible. After all filming was complete, it was decided the analysis would focus on one skills set only, that of knife skills which could be observed on every occasion. In addition, it was decided for the purposes of this study to focus primarily on the beginning and end of the study, as it was hoped that this would provide the clearest distinctions between the Novice stage in Week 1 and the anticipated Advanced Beginner stage in Week 11.

Expert observation study

The expert observation study consisted of the recording on video of a short segment each of two different expert lecturers demonstrating the knife skills which the students in the novice study were beginning to learn. This was to provide a comparison between the novice level of the students at the start, the advanced beginner stage at the end of the unit and now the expert stage, that of a competent and experienced practitioner.

Semi-structured interviews

Stake (1995 p. 64) states that “Two principal uses of case study are to obtain the descriptions and interpretations of others.” “Qualitative researchers will take pride in discovering and portraying multiple views of the case. The interview is the main road to multiple realities.”

In this case, in order to gain insight into how other professional bodies viewed, assessed and levelled psychomotor skills, it was decided to approach two of these (the RAD and the ABRSM) for their views. In addition, the QCDA were also approached as they had been able to assign qualifications offered by the RAD and ABRSM onto their level framework and it was felt that their experience of this might afford some insight into the mechanism by which this could be applied elsewhere. The two experts in the observation study were also interviewed as to their views on

this topic and how this affects teaching, learning and assessment. The format of the interviews was that of semi-structured interviews: Gillham (2000 p. 65) observes that this is the most important form of interviewing in case study research. He goes on to detail the preparation for interviews as follows (Gillham, 2000 p. 67):

- Identify key topics
- Frame questions (5-10)
- Use open questions
- Prompts (to remind the interviewee)
- Probes (to get the interviewee to tell you more)
- Recording

The semi-structured format was chosen so that part of the interview at least could be made the same for the five different interviewees and the replies compared; however, the researcher did not want to eliminate the possibility of other information been offered which was not pre-scripted but which nevertheless might prove to be valuable.

Gillham (2000 p. 71) also recommends interview transcription and content analysis, which involves taking each transcript in turn, highlighting substantive statements, putting statements into initial categories, deciding if these can these be combined or spilt-up, revisiting the transcripts again, marking up any substantive statements that don't fit into a category, modifying the categories if necessary and finally entering the results onto an analysis grid. The Analysis Grid for the interviews can be found at Appendix X.

Whilst conducting the interviews, the researcher was aware of Reissman's views (1993 p.11 as cited in Miller & Glassner, 2004 p. 127-128) that "The issues of how interviewees respond to us based on who we are – in their lives, as well as social categories to which we belong, such as age, gender, class and race – is a practical concern as well as an epistemological or theoretical one."

Although face-to-face interviews were sought, eventually the QCDA could only be interviewed by telephone because of scheduling difficulties. The two expert chefs and the ABRSM and RAD representatives were interviewed face-to-face and these interviews were recorded and subsequently transcribed. For the telephone interview, the interviewer took detailed notes and transcribed them immediately so that the transcript was as accurate as possible.

Analysis of SQA HNU learning outcomes

A basic quantitative analysis was undertaken of SQA HNUs to ascertain the number of learning outcomes which might include psychomotor skills in proportion to all the learning outcomes. As this would give an indication of the importance of the study being undertaken these results are reported in the last section of Chapter 1. As mentioned in Chapter 1, the results of this analysis may be affected by the influence of the SCQF level descriptors being cognitive based, and therefore writers being under pressure not to include practical outcomes because it would be difficult to provide evidence that these were at the right level. However, it gives some indication of the scope of the study.

Documentary analysis

The aim of the documentary analysis of quality agency documents was to get an indication of how these authorities viewed psychomotor skills across a range of relevant vocational disciplines. Stake (1995 p. 67) says that “Gathering data by studying documents follows the same line of thinking as observing or interviewing”; hence this part of the study was seen as being complementary to the observation studies and interviews. Atkinson and Coffey (2004 p. 57) explain the importance of documentary evidence: “the pervasive significance of documentary records, written and otherwise, in contemporary social (and hence research) settings.”

Atkinson and Coffey (2004 p. 68) also offer helpful suggestions as to methods of analysis, stating that it is possible to analyse texts in terms of intertextual

relationships i.e. relate several different sources to each other. Also, the importance of authorship and readership is mentioned; it is important to discover and state who wrote the documents and for what audience? (Atkinson & Coffey, 2004 p. 70). Prior (2004 p. 78) also states the importance of the order and organisation of the content within a document is important.

For this study, a range of quality documents were analysed using NVivo8. Firstly, the quality documents relevant to the subjects in the study were collected. These included the QAA Subject Benchmark Statements for Art & Design: Dance, Drama and Performing Arts; Dentistry; Hospitality, Leisure, Sport and Tourism; Medicine; Music, and Veterinary Science. Then, the Review documents for the relevant subjects were collected. There proved to be a very large number for Art & Design and Nursing in particular, so it was decided that some of these would need to be discarded. Although this might lead to issues of bias (Yin, 2009 p. 102), it was felt that the disproportionate number of reviews for these two subjects as opposed to the others of interest to this study would have also resulted in bias. However, some relevant subjects were under-represented by Review Reports, so for these subjects the latest Subject Overview Report was included. Lastly, the Institutional Reviews of relevant specialist institutions were also included together with the latest Quality Framework documents from both Scotland and England. In total, 61 quality documents were chosen for the documentary analysis.

Two slightly different approaches were taken to this analysis. Firstly, an element of content analysis was included to gauge the frequency of use of certain terms. This was mainly used in a deductive way, using codings of terms which had been derived from the literature review. Some of the codes used were short phrases e.g. 'fitness to practice'; combinations of 'theory' and 'practice', whereas some were individual words e.g. 'assessment'. This is consistent with the findings of Polit and Beck (2004, as cited in Elo & Kyngäs, 2007) who intimated that a unit of analysis could be a word or a sentence, among others, which in deductive uses could be derived from a literature review or model. Validity and reliability can be tested through the

examination of the data recorded and analysed in Chapter 5, and the NVivo codings included at Appendix XI.

Once the content analysis was complete, the documents were then analysed qualitatively in order to give a through presentation of the rich data found within the documents (Polit & Beck, 2004 as cited by Elo & Kyngäs, 2007).

Data analysis in case study methodology

Stake (1995 p. 29) states that

“Most case study reports present both coded data and direct interpretation but one or other usually bears the conceptual load.” “Major efforts to develop understanding from coded data will require early identification of relevant variables and situations in which the variables are observable, just as major efforts to develop understanding from direct interpretation and more likely to succeed with early identification of situations in which the issues become apparent.”

Yin (2009 p. 130) identifies four general strategies for analysis of case study data: “

- Relying on theoretical propositions (*e.g. from the literature*)
- Developing a case description
- Using both qualitative and quantitative data
- Examining rival explanations
-

He then discusses five analytical techniques: “

- Pattern matching
- Explanation building
- Time-series analysis
- Logic models
- Cross-case synthesis”

Yin (2009 p. 136)

In this study, firstly each set of data (documentary analysis, video recordings of novices and experts and expert interviews) was analysed separately against the criteria identified from the literature review. This is described by Yin (2009 p. 149) as a logic model, which consists of “matching empirically observed events to theoretically predicted events”. In addition, some additional criteria were added after the analysis was complete. Then, the different sources of data were compared in a

cross- case analysis. Finally, the data was compared, analysed and interpreted against the findings of the literature review and conclusions drawn. As this is an exploratory, qualitative case study, the knowledge and interpretation of the researcher (Yin, 2009 p.160; Stake, 1995 p.43) were used to interpret the findings and make recommendations.

Chapter 5: Findings and Analysis: Quality Documents.

Introduction

Sixty-one quality documents were analysed using NVivo8. Coding was derived primarily from findings in the literature review although provision was made to add others codings when required. For details of the codings employed, please see Appendix XI. The full NVivo8 analysis can be found on the CD submitted with this thesis.

The quality documents analysed related to the vocational subjects identified in Chapter 2: namely medicine, veterinary medicine, dentistry, physiotherapy, nursing, sport, music, dance, drama, hospitality and some areas of art and design. The types of documents and numbers of each type can be found in the table below.

Subject	Institutional Review (IR) (of specialist institutions)	Qualification Framework (QF)	Subject Review (R)	Subject Benchmark Statement (SBS)	Subject Overview Report (SOR)	Total per Subject Area
Non-specific		3				3
Medicine	1			1	1	3
Veterinary Medicine	1			1	1	3
Dentistry				1	1	2
Physiotherapy			1		1	2
Nursing (R documents include Physiotherapy)			18			18
Music	3		4	1		8
Dance & Drama	1		8	1		10
Hospitality			2	1		3
Art & Design			7	1	1	9
Total per document type	6	3	40	7	5	61

Notes:

1. Most nursing documents include *Physiotherapy (and Midwifery and Health Visiting)*
2. In some documents *Dance, Drama and Performing Arts* included *Music*.
3. *Hospitality* includes *Events, Hospitality, Leisure, Tourism and Sport*.
4. All documents were authored for the *QAA*, with the exception of two of the three qualifications frameworks (one each from *QCA* and *SCQF*).

Table 2. *Summary of Quality Documents used for the Documentary Analysis.*

In order to present the results as clearly and meaningfully as possible, this Chapter (analysis of quality documents), Chapter 6 (analysis of video data) and Chapter 7 (analysis of interview data) have been divided into sections related to the four research aims. Within each section, example responses will be given, and then references to where other similar responses can be found. This will be followed by

the analysis of the results in that section, and a brief summary. The summary can be found in a box at the end of each section or sub-section. If a section contains several sub-headings, results, analysis and summary will all be under that sub-heading. Chapter 8 contains the cross-case synthesis of all the primary data, and the discussion takes place in Chapter 9.

Research Aim 1: To investigate the place of psychomotor skills within vocational education curricula and how these are viewed by different bodies.

In relation to the findings from the documentary analysis in this chapter, this is mainly the view of the QAA, together with the input of the QCA and SCQF.

Use of the word 'skills'

'Skills' were referred to 437 times in the analysis. However, the phrase 'psychomotor skills' was rarely used, with only 3 mentions. However, several terms were used which would imply that psychomotor skills were meant, namely 'practical skills' (81 mentions) and technical skills (35 mentions). Another phrase commonly employed in connection with skills was 'clinical skills', used extensively in the documents concerning nursing and allied professions such as physiotherapy and midwifery, medicine, dentistry and veterinary medicine. 'Clinical skills' appears to imply the use of a combination of cognitive and practical psychomotor skills used in a clinical situation (e.g. examining a patient) and is mentioned 123 times. Other combinations with the word skills which might imply the inclusion of psychomotor skills were 'competence' (116), 'performance skills' (30) (mainly used in connection with music, dance, drama and performing arts), 'professional skills' (36), 'specialist (or specialised or subject-specific) skills' (17) and 'vocational skills' (18). There are also mentions of very specific skills related closely to the subject area being studied e.g. notation (1), musical (4).

However, many uses of the word 'skills' appeared to be unrelated to any kind of practical psychomotor skills, but instead to the more cognitive skills used in higher

education. Here, a plethora of terms are used, often in combination and with no consistency even within documents. These are summarised in the table below.

Transferable	69
Communication	40
Analytical	31
Critical	30
Key	23
IT	22
Team-working	21
Generic	20
Intellectual	17
Problem-solving	16
Study	14
Information	14
Research	13
Independent Learning	13
Presentation	12
Inter-personal	11
Reflective	11
Academic	10
Common	9
Cognitive	9
Creative	8
Lifelong learning	8
Decision-making	6
Organisational	6
Synthesis	5
Personal	5
Numeracy	5
Conceptual	4
Learning	4
Graduate	3
Independent Thinking	3
Negotiation	3
Leadership	3
Core	2

Group	2
Essential	2
Reasoning	2
Planning	2
Working with Others	2
New	2
Evaluation	2
Visual	2
Computer-aided	2
Evaluative	2
Entrepreneurial	2
Literacy	2
Rational	1
Management	1
Business	1
Project Management	1
Integrated	1
General	1
Relevant	1
Career-specific	1
Investigative	1
Reasoning	1
Subject-relevant	1
Employability	1
Social	1
Autonomous	1
Professional Development	1
Expressive	1

Table 3. *Descriptions of 'skills' within the quality documents*

The ways in which this word is used, even within documents produced solely by the QAA, appears to reflect the wide range of terms in use across vocational education to mean very similar things. Subjects would appear to have each developed their own terminology, which cannot assist those devising level frameworks and descriptors in comparing across subjects. So, musicians, dancers and actors talk about

‘performance’ skills, which include psychomotor skills relating to movement, technique on an instrument and so on. Nurses, midwives, physiotherapists, doctors and veterinary surgeons, however, talk of ‘clinical’ skills which once again include psychomotor skills but also more cognitive skills such as those used in diagnosis. Artists and designers might use the term ‘technical’ skills as might hospitality professionals. In addition, these subject-specific terms are rarely defined; it is presumed that the reader is him or herself a subject-specialist and will know immediately what such terms might mean. There are also broader terms in use, such as ‘vocational’, ‘professional’ and ‘specialist’ skills, which could encompass all of the above. For those non-subject specialists who are trying to find parity across subjects, this renders the task virtually impossible. In terms of future curriculum and framework development within vocational education, this area could be investigated further.

Once into the realm of the more conventional ‘study’ or ‘academic’ skills in use across all higher education, the range of terms in use is immense. This must also cause confusion. In addition, when the term ‘skills’ is used, it is sometimes unclear to which set of skills is being referred; practical psychomotor, cognitive, personal and so on.

‘Skills’ is used in conjunction with many adjectives, which could cause confusion. ‘Skills’ can be of several types; practical, academic, transferable and many others; team-working is included in this category. The use of ‘skills’ and its adjectives is never defined; it is presumed that the reader is a subject specialist and understands what is meant.

Research Aim 2: To explore the criteria that might indicate a clear progression in psychomotor skills from one level of learning to the next

Physical criteria

There was almost no mention of the physical criteria which might distinguish between levels of psychomotor (practical, technical, vocational, professional, specialist) skills. Of the four physical criteria (speed, accuracy, reliability and correct use of equipment and materials), only the last of these was mentioned at all, and then only 6 times. For example:

individuals will select and use a range of materials appropriate to a fine art outcome;

(R: Art & Design, Hertford College, 2005).

This reflects the Subject Benchmark Statement for Art & Design (SBS: Art & Design, 2008) which states that students should be able to

select, test and make appropriate use of materials, processes and environments.

Also the Subject Benchmark Statement for Dentistry (SBS: Dentistry, 2002) has a similar requirement:

restore teeth to form, function and appearance with appropriate materials...

There was mention of only one of the identified physical criteria; that of the correct use of equipment and materials. This was not unexpected as the type of documents analysed were unlikely to go into this level of detail. However, for that criterion at least, there is evidence that this is necessary across some of vocational subjects, particularly Art & Design (R: Art & Design, Hertford College, 2005; SBS: Art & Design, 2008) and Dentistry (SBS: Dentistry, 2002).

The only evidence of physical criteria mentioned in the documents that might be used to indicate a progression was that of the correct use of materials and equipment.
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Levels of skill

However, when looking at references to ‘levels’ generally, there were 77 mentions, often combined with ‘learning outcomes’ (105 mentions). Some of these certainly imply differentiation between levels of psychomotor skills; this is particularly apparent in the references to ‘clinical’ skills. For example:

Given that on entry to the HNC/D Performing Arts: Dance, students' standards of practical dance may vary considerably, they are encouraged to study at a level commensurate with their abilities. For example, students with limited experience of ballet may join a level 1 or 2 class, whereas those with more advanced skills may be placed in a level 4 class.

(R: DD&PA, Music Liverpool College, 2004)

The students show progressive development from the beginning of the programme to registered practitioner with a good knowledge base, and progressive development of clinical skills.”

(R: Nursing, University of Birmingham, 2006)

The curricula provide intellectual and clinical progression and offer experiences to ensure that students leave as competent practitioners... The route from the 'participant observer' role to the 'competent practitioner' is made very clear.

(R: Nursing, University of East Anglia, 2006).

The pre-registration curricula provide clinical and intellectual progression and ensure that graduating midwives are fit for practice and award.

(R: Nursing, University of Surrey, 2006).

Further examples can be found at R: Nursing, University of Sheffield, 2006; R: Nursing, University of East Anglia, 2006; R: Nursing, University of Northumbria, 2006; R: Nursing, University of Southampton, 2006.

The documents seem to presume in many cases that clear distinctions between levels

of skill can be seen and assessed. There are references to joining different dance classes according to skills level (R: DD&PA, Music, Liverpool College, 2004) and of progression in clinical skills from one level to the next (R: Nursing, University of Birmingham, 2006; R: Nursing, University of East Anglia, 2006; R: Nursing, University of Southampton, 2006). Some of these levels are even defined and named, as can be seen above at R: Nursing, University of East Anglia, 2006).

That skills could be at various levels was clearly implied in several documents.

These levels were sometimes differentiated by name.

Defining the final level of formal education

The concept of a possible final level of formal education can be found when examining the use of the phrases “competent” (together with competence, 116 mentions) and “fitness to practice” (127 mentions). Examples include:

The assessment strategy ensures that completing students achieve the expected academic levels and appropriate professional competences.

(R: Nursing, Brunel, 2006).

The emphasis within the ILOs is to produce competent practitioners eligible to apply for registration with the HPC and for membership of the RCSLT.

(R: Nursing, DeMontfort, 2006).

Some skills within the profile are ‘compulsory’ and programme regulations state the skills must be completed up to the level of a ‘competent practitioner’ by the end of the programme.

(R: Nursing, University of East Anglia, 2006).

Graduates from dental schools are required to demonstrate a thorough understanding of the importance of ethical practice and professionalism, high levels of ability in communication skills and competence in the clinical and technical aspects of dentistry.

(SBS: Dentistry, 2002).

Further examples can be found at R: Nursing, Coventry, 2006; R: Nursing, University of Central England, 2006; R: Nursing, University of Sheffield, 2006.

There are also examples of occasions where the final stage of education is not seen as being at the correct level for the students to enter industry. For example:

In some cases, the final level does not fully reflect the pace and demands of the relevant industry. For example, much of the final year of the is taken up by students developing and completing a self-determined project. While this provides students with opportunities to experiment and develop creative ideas, it does not realistically prepare them for the realities of commercial practice.

(R: Art & Design, Leeds College, 2006).

It appears that, within vocational subjects, the final level of formal education is that which enables to graduate to enter the appropriate profession and practice that profession competently. There is a clear link between this final level of education and the start of a professional career. So, the final level is seen as being appropriate academically (R: Nursing, Brunel University, 2006; R: Nursing, University of Sheffield, 2006); and also as rendering the graduating students professionally competent (R: Nursing, Brunel University, 2006; R: Nursing, Coventry University, 2006; R: Nursing, DeMontfort University, 2006; R: Nursing, University of Central England, 2006; R: Nursing, University of East Anglia, 2006; R: Nursing, University of Sheffield, 2006; SBS: Dentistry, 2002). Professional competence is not unsurprisingly linked to 'fitness to practice' and 'safe practice' (R: Nursing, University of Central England, 2006); in other words it is implied that

the graduate can enter the profession, register on a professional register (R: Nursing, DeMontfort University, 2006) and practice safely unsupervised. In some cases, the final level of formal education is criticised for not equipping the students for professional practice (R: Art & Design, Leeds College, 2006), which would imply that the QAA itself views fitness for professional practice to be the immediate aim of the final level of formal vocational education.

In some cases, a final level of practical skill is clearly identified as being important at this stage (R: Nursing, Coventry University, 2006; SBS: Dentistry, 2002). This implies that this level of practical skill can be described, assessed and recognised within the programme of study.

The final level of formal education appears to be capable of being defined both academically and in terms of skills and competence.

The final level is seen as that which a graduate can exit to safe, competent, unsupervised practice in their profession.

A level beyond formal education

There are also occasions where a level above that of 'competence' is implied i.e. that after completion of a formal programme of education even higher levels of skill can be achieved. Examples include:

To achieve their final professional status in their chosen field, graduates will have to undertake much further study. It should be recognised, therefore, that graduation marks but a landmark on the way to independent medical practice.

(SBS: Medicine, 2002).

On completion of the programme, students are fit for practice, award and purpose as competent and self-directed, lifelong learners.

(R: Nursing, Brunel, 2006).

Sometimes this is linked with becoming a reflective practitioner (93 mentions) i.e. a practitioner who continues to learn from their future experience. Examples include:

develops reflective practitioners and provides opportunities for lifelong learning, continuing professional development and advanced study.

(R: Nursing, City University, 2006).

The following extract from the Subject Benchmark Statement for Dentistry (2002) is one of the most comprehensive:

Becoming a reflective dentist

Graduating dentists should be dedicated to the principle of lifelong learning and continued professional development. They should be able to:

identify and use sources of continuing professional development and apply critical thought to a continually expanding knowledge base such that professional competence is maintained;

discharge the obligations incumbent upon every professional person including contributions to, and support for, the profession's collective initiatives in self-regulation, maintenance of standards, and the advancement of knowledge and expertise;

assess personal progress, including the identification of strengths and weaknesses;

evaluate all treatment outcomes, including the unexpected, and undertake remedial action where appropriate;

recognise and fulfil their responsibilities both as adult learners and as teachers;

use the principles of peer review and quality assurance in dental practice.

Further examples can be found at R: Nursing, Coventry University, 2006; R: Nursing, University of Central England, 2006.

That a level or levels of learning beyond that of formal education exist is implicit in many documents. Some acknowledge that the qualification which they are discussing

may not be the final level of formal education which will be needed (SBS: Medicine, 2002) whilst others imply that, as students exit the qualification being discussed, they go into a period of lifelong learning (sometimes self-directed) (R: Nursing, Brunel University, 2006); the implication is that this will be mainly through work experience (or CPD or further formal study), though this is not always clearly articulated (R: Nursing, City University, 2006).

However, the concept of 'reflection' often expressed as becoming a 'reflective practitioner', is a recurring theme through many documents. This is found particularly frequently in the documents related to Nursing (R: Nursing, City University, 2006; R: Nursing, University of Central England, 2006) and other medical qualifications (SBS: Dentistry, 2002). The purpose of reflective practice appears to be to learn and improve constantly whilst working. That further improvement is still possible once again implies a level or levels beyond that of the formal education already undertaken, although this educational qualification itself has already deemed the graduating students to be 'competent' and 'fit for practice' (R: Nursing, Brunel University, 2006).

Many documents mention that the graduate is prepared for lifelong learning, perhaps through work experience, and reflective practice, which implies continual improvement towards higher levels.
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Research Aim 3: To explore ways in which such criteria might be made explicit through being described in learning outcomes: or, if not, of being codified by some other means

Wording of learning outcomes

There are 105 mentions of learning outcomes in the documents. Many of these relate to Intended Learning Outcomes (ILOs) which are part of the required Programme Specification, rather than to specific mentions of learning outcomes in relation to

modules. They therefore tend to be general in nature; for example:

Programme specifications are consistent in format across the provision and identify ILOs under four key aspects: knowledge and understanding; skills and other attributes; professional practical skills and transferable skills. They have been written to provide a clear understanding by students of the expectations of the courses.

(R: Art & Design, Oxford & Cherwell College, 2006).

Module ILOs are clearly set out in module descriptors that are given to students at the start of each module delivery. Learning outcomes are discussed at the beginning of each module and before each assessment and students confirmed that they are fully aware of what needs to be completed to achieve each learning outcome. Regular tutorials help to enforce students' understanding of ILOs and feedback provided during the assessment process is used to reinforce this understanding.

(R: Art & Design, University of the Highlands & Islands, 2005).

The aims and learning outcomes are effectively communicated to students through programme and module handbooks and during the induction process. Programme specifications are available on the College website and these also clearly outline aims and outcomes. Students indicate that they are familiar with the ILOs and know what is expected of them. This is particularly apparent in the development of practical and vocational skills, where students have to write their own aims for their placement activities based upon the ILOs.

(R: Hospitality, Leisure, Sport & Tourism, Bell College, 2006).

Intended learning outcomes (ILOs) are grouped under knowledge and understanding, intellectual skills and practical skills.

(R: Music, Art & Design, Barking College, 2005).

Most of the references to learning outcomes in the documents are to programme ILOs and are therefore not unsurprisingly somewhat general in nature, as usually more specific learning outcomes would be stated in module descriptors. However, there is some evidence that learning outcomes should relate to not only academic outcomes (both knowledge-specific and academic ‘skills’) (R: Art & Design, Oxford & Cherwell College, 2006; R: Music, Art & Design, Barking College, 2005) but also to practical skills and competences (R: Art & Design, Oxford & Cherwell College, 2006; R: Hospitality, Leisure, Sport & Tourism, Bell College, 2006; R: Music, Art & Design, Barking College, 2005). As, when preparing curriculum documentation, module learning outcomes are required to be mapped against the programme ILOs, this would imply that practical outcomes are indeed included in the module descriptors of these programmes. However, there is insufficient detail to be of assistance in the wording of these outcomes.

There is evidence that learning outcomes should relate to skills practice and competence as well as more academic outcomes; however, there is insufficient detail to assist in the wording of these.

Research Aim 4: To consider the implications of the above for the teaching and assessment of psychomotor skills in vocational education

Information relating to this research aim was found within references to ‘assessment’ (177 mentions relating to the assessment of skills), ‘theory and practice’ (176 mentions) and ‘teaching and learning’ (93 mentions).

Assessment

Firstly, ‘assessment’ of skills is also closely linked with ‘professional standards’ (53 mentions), ‘competence’ and ‘fitness to practice’. Some examples include:

However, the use of those external examiners appointed to examine performance elements of courses was somewhat different. Both schools of the Academy adhered to the principle that performance external examiners should be involved directly in the examination of students. The RA noted that this requirement for students to be seen and heard by the relevant examiner was costly, but worthwhile in terms of 'underwriting the integrity of the examinations process and in assisting the Academy to arrive at an informed and objective insight regarding the comparability of [its] standards'. Assurance against the potential for subjective bias, particularly in the end of year assessment of performance, is provided through the use of assessment panels. These, typically, are panels of three including at least one external examiner.

(IR: Royal Scottish Academy of Music and Drama, 2004).

The programmes employ a range of assessment methods. These include practicals, observation, peer review, formative and summative assessment in every unit, group critiques and self-evaluation. Assessment is based upon a variety of challenging assignment briefs, which cover skills-based projects and conceptual work and utilise the industrial expertise of the staff. External examiners have confirmed that assignments are well written and planned to cover identified assessment criteria.

(R: Art & Design, City College Manchester, 2005).

Assessment within the provision is particularly strong in its vocational and employability focus.

(R: Hospitality, Leisure, Sport & Tourism, University of the Highlands and Islands, 2006).

During practice, placement mentors/CPTs assess practice using detailed grading criteria.

(R: Nursing, Anglia Ruskin University, 2008).

An overriding emphasis on the preparation of students for professional life.

(R: Royal Scottish Academy of Music & Drama, 2004).

Professional bodies may have an influence on standards and awards within some departments in HEIs. For example, the National Council for Drama Training and the Council for Dance Education and Training, through their historical accreditation of drama/theatre and dance programmes in the UK, continue to prescribe professional standards in the context of some vocational honours degree awards.

(SBS: Dance, Drama & Performing Arts, 2007).

Further examples can be found at R: Dance, Drama & Performing Arts, Doncaster College, 2006; R: Dance, Drama & Performing Arts, Newcastle College, 2006; R: Dance, Drama & Performing Arts, Music, Liverpool College, 2004; R: Nursing, Coventry University, 2006; R: Nursing, University of Surrey, 2006; R: Nursing, Brunel University, 2006; IR: Trinity Laban Conservatoire of Music and Dance, 2008.

Other references to assessment indicate the variety of assessment types used in vocational education:

The reviewers viewed a range of students' work, including CD and video recordings of practical performance, critical analyses, essays, reports, research methodologies and technical exercises.

(R: Dance, Drama & Performing Arts, Music, Liverpool College, 2004).

New assessments have been developed, including examinations, posters and objective structure clinical examinations (OSCEs).

(R: Nursing, Coventry University, 2006).

coursework - practical (group, individual) - written (for example, essays, project- reports, journals/portfolios, dissertations, performance text/score/plays, storyboards, scenographies), oral presentation examination - practical (for example, internal (restricted) and/or public performances) - written (for example, timed, take-away), and viva voce.

(SBS: Dance, Drama & Performing Arts, 2007).

Clinical competence must be rigorously assessed so as to identify those who are not yet fit for practice. Methods of achieving these aims may vary but should always include frequent direct observations of students interviewing and examining patients. Assessment of some qualities will require extended observations to be made. While professional attitudes, for example, may be difficult to assess directly, the consequences of attitudes on behaviour must be assessed - usually by observation of that behaviour over a period of time. Assessment needs to be thorough but should not be so onerous or so frequent as to interfere with the learning process.

(SBS: Medicine, 2002).

creative projects, often assessed by a mixture of continuous assessment, documentation and final presentation/performance, and especially relevant for interdisciplinary work (for example music in combination with theatre, dance, video etc)
aural examinations assessing the ability to recognise by ear and to notate sounds, in a wide range of contexts
extended dissertations, individual projects and portfolios as products of advanced understanding, knowledge, research skills and/or creative achievement.

(SBS: Music, 2008).

Further examples can be found R: Nursing, DeMontfort University, 2006; R: Nursing, London Metropolitan University, 2006; R: Nursing, University of Central England, 2006; R: Nursing, Coventry University, 2006; R: Nursing, Anglia Ruskin University, 2008; R: Nursing, Southampton University, 2006.

If psychomotor (practical) skills are to be included in learning outcomes, either at programme or module level, they must be capable of being assessed. In the documents analysed, it is often the final level of assessment that is emphasised, as this is mainly where students are able to prove their 'competence', 'fitness to practice' and that they have achieved 'professional standards'. In order to prove that

this level has been achieved, various strategies are adopted: one of the most prevalent appears to be the use of external examiners (both academic and professional) as part of the final assessment team (IR: Royal Scottish Academy of Music and Drama, 2004; IR: Trinity Laban Conservatoire of Music and Dance, 2008; R: Nursing, Anglia Ruskin University, 2008; R: Nursing, Brunel University, 2006; R: Nursing, Coventry University, 2006). This is in addition to the usual use of external examiners to verify that the standard of work is appropriate (R: Art & Design, City College Manchester, 2005; R: Dance, Drama & Performing Arts, Music, Liverpool College, 2004; R: Nursing, Brunel University, 2006). The presence of external examiners at the final assessment implies that this assessment is a 'performance' demonstrating the skills achieved and therefore cannot be viewed at another time or by other means. The presence of external examiners, together with the input of professional bodies and employers, ensures that professional standards are being achieved by the graduating students (IR: Royal Scottish Academy of Music and Drama, 2004; R: Dance, Drama & Performing Arts, Music, Liverpool College 2004; R: Nursing, Coventry University, 2006; SBS: Dance, Drama & Performing Arts, 2007).

Another apparent characteristic of assessment within vocational education is the use of a wide range of assessment types and instruments. If it is necessary to assess academic knowledge, 'transferable' skills, attributes and attitudes and practical skills, it follows that many different types of assessment will be needed. Just some of the assessment types in use are listed in the table below in order to give an indication of the wide variety used (the list is not exhaustive):

CD recordings of practical performance	R: Dance, Drama & Performing Arts, Music, Liverpool College, 2004
Video recordings of practical performance	R: Dance, Drama & Performing Arts, Music, Liverpool College, 2004
Critical analyses	R: Dance, Drama & Performing Arts, Music, Liverpool College, 2004
Essays	R: Dance, Drama & Performing Arts, Music, Liverpool College, 2004; SBS: Dance, Drama & Performing Arts, 2007; R: Nursing, University of Central England, 2006; R: Nursing, Southampton University, 2006; R: Nursing, Anglia Ruskin University, 2008
Reports	R: Dance, Drama & Performing Arts, Music, Liverpool College, 2004
Research Methodology	R: Dance, Drama & Performing Arts, Music, Liverpool College 2004
Technical exercises	R: Dance, Drama & Performing Arts, Music, Liverpool College, 2004
Creative projects	SBS: Music, 2008
Practical (performance)	SBS: Music, 2008; SBS: Dance, Drama & Performing Arts, 2007; R: Nursing, Anglia Ruskin University, 2008
Presentation	SBS: Music 2008; R: Nursing, Southampton University, 2006; R: Nursing, Anglia Ruskin University, 2008
Aural examinations	SBS: Music, 2008
Dissertations	SBS: Music, 2008; SBS: Dance, Drama & Performing Arts, 2007; R: Nursing, Anglia Ruskin University, 2008
Individual projects	SBS: Music, 2008
Portfolios	SBS: Music, 2008; SBS: Dance, Drama & Performing Arts, 2007
Direct observation	SBS: Medicine, 2002
Performance texts	SBS: Dance, Drama & Performing Arts, 2007
Storyboards	SBS: Dance, Drama & Performing Arts, 2007
Scenographies	SBS: Dance, Drama & Performing Arts, 2007
Viva voce	SBS: Dance, Drama & Performing Arts, 2007
Multiple-choice questions	R: Nursing, University of Central England, 2006

Unseen examinations	R: Nursing, University of Central England, 2006; R: Nursing, Coventry University, 2006
OSCEs	R: Nursing, University of Central England, 2006; R: Nursing, Coventry University, 2006
Oral examinations	R: Nursing, University of Central England, 2006
Case-studies	R: Nursing, University of Central England, 2006; R: Nursing, Southampton University, 2006
Log-books	R: Nursing, University of Central England, 2006
Learning and reflective contracts	R: Nursing, Southampton University, 2006
Clinical examinations	R: Nursing, Southampton University, 2006
Debates	R: Nursing, London Metropolitan University, 2006; R: Nursing, Anglia Ruskin University, 2008
Group work	R: Nursing, London Metropolitan University, 2006
Simulations	R: Nursing, London Metropolitan University, 2006
Reflective accounts	R: Nursing, London Metropolitan University, 2006
Posters	R: Nursing, Coventry University, 2006
Skills record	R: Nursing, Anglia Ruskin University, 2008

Table 4. *Assessment types found in the quality documents.*

Although some of these assessment types are to be expected within Higher Education (essays, examinations, case-studies), many others seemed to have been developed with a view to assessing practical skills, either alone, or in combination with cognitive or affective aspects. Those assessment types which appear to include practical skills are shaded in the table above.

If assessment of psychomotor skills is taking place, then assessment criteria must have been written which in turn should relate to learning outcomes. This implies both that an appropriate level of practical skill has been recognised by lecturers, agreed by external examiners and communicated clearly to students, and also that it is therefore capable of being described in such way that all these users can understand

the level of performance required.

Final assessment is what proves 'competence', 'fitness to practice and that professional standards have been achieved.

The involvement of external examiners in final, practical assessment ensures these standards are being met.

A wide range of assessment types is used to cover the range of cognitive, affective and psychomotor skills required in vocational education.

Theory-practice linkages

A recurring theme when examining the writing on assessment (and, indeed, teaching and learning generally) is the importance on the linking of theory and practice. For example:

The samples of student work made available to the reviewers indicated that opportunities to link theoretical elements with individual practice were missing in some instances.

(R: Art & Design, University of the Highlands and Islands, 2005).

The integration of theory and practice is achieved through addressing the historical and contextual issues relevant to a particular discipline within assignment tasks.

(R: Dance, Drama & Performing Arts, Newcastle College, 2006).

The programmes provide a good mix of academic knowledge and understanding, professional and transferable skills and a strong vocational focus with many opportunities to integrate theory with practice.

(R: Hospitality, Leisure, Sport & Tourism, Bell College, 2006).

The requirement for students to integrate theory and practice in all the modules has been recognised by the external examiners as preparing students well for lifelong learning and the development of their future practice.

(R: Nursing, Brunel University, 2006).

Students participate in a well-designed range of teaching and learning which provides them with good opportunities to interrelate theoretical and practical studies.

(SOR: Veterinary Medicine, 2000).

Further examples can be found at R: Dance, Drama & Performing Arts, Doncaster College, 2006; R: Nursing, Coventry University, 2006; R: Nursing, DeMontfort University, 2006; R: Nursing, London South Bank University, 2006; R: Nursing, Northumbria University, 2006; R: Nursing, Nottingham University, 2006; R: Nursing, University of Birmingham, 2006; R: Other Subjects allied to Medicine, NE Surrey College, 2006; R: Music, Art & Design, Barking College, 2005.

A frequently-recurring theme in the documents when discussing teaching, learning and assessment in vocational subjects is the importance of linking theory to practice. It would seem from the documents that this linkage is viewed as desirable and is praised by reviewers where it is evident (R: Nursing, University of Birmingham, 2006; R: Nursing, Nottingham University, 2006; R: Music, Art & Design, Barking College, 2005) and deplored where it is not evident (R: Art & Design, University of the Highlands and Islands, 2005). This linkage is also viewed as desirable by external examiners (R: Nursing, Brunel University, 2006) and students (R: Nursing, Northumbria University, 2006).

Theory-practice linkages appear to be used in teaching and learning methods (SOR: Veterinary Medicine, 2000; R: Nursing, University of Birmingham, 2006) and also in a range of assessments (R: Nursing, Nottingham University, 2006; R: Nursing, Northumbria University, 2006; R: Nursing, London South Bank University, 2006) including examination questions (R: Nursing, Northumbria University, 2006). Some

assessments appear to have been designed with the purpose of testing such linkages (R: Nursing, DeMontfort University, 2006; R: Nursing, Coventry University, 2006) which would seem to be an important one for the future professional practice of the student and therefore an essential component of vocational education (R: Hospitality, Leisure, Sport & Tourism, Bell College, 2006).

The linking of theory with practice appears to be thought desirable by reviewers, external examiners and students.

Theory and practice is linked in both assessment and teaching and learning methods.

Pass/Fail or Grading on practical work

Also of interest is the possibility of two differing approaches to assessment within the same programme, namely the grading of theoretical assessments but applying the principle of competence (i.e. pass or fail) to practical assessments. Examples include:

Assessment grading criteria are provided for both theory and practice-based portfolio assessments. The criteria explicitly address cognitive and transferable skills, as well as the integration of theory and practice, and ensure that the different categories of achievement are clearly differentiated.

(R: Nursing, University of Surrey, 2006).

Practice is not graded but is assessed on a Pass/Fail basis.

(R: Nursing, Northumbria University, 2006).

Grading of practice in the pre-registration programmes was implemented with the 'making a difference curriculum' in September 2001, except for Return to Professional Practice (Nursing) and the Postgraduate Diploma which have a Pass/Fail grade for practice competences.

(R: Nursing, Northumbria University, 2006).

Further examples can be found R: Nursing, University of Sheffield; R: Nursing, Northumbria University, 2006.

The inclusion of practical assessments as part of the overall assessment strategy within these vocational programmes raises another issue. If the required result of such assessment is for the student to be deemed 'competent' and 'fit to practice', then should these particular types of assessment be marked as pass/fail only (i.e. competent/not yet competent) (R: Nursing, Northumbria University, 2006)? The alternative view is that as these assessments form an integral part of the students' whole programme, then they should be graded so that the students' success or otherwise can contribute to their overall grade or honours classification (R: Nursing, University of Surrey, 2006). Some institutions appear to apply these two different approaches to different programmes (R: Nursing, Northumbria University, 2006) although the trend appears to be towards the grading of practical elements. To combine these two different types of marking within one programme within an institution must pose difficulties for that institution's systems though these would not be insurmountable.

Both of these systems are in use but the trend appears to be towards the grading of practical work.

Teaching & Learning Approaches

The range of teaching and learning approaches used within vocational education appears to be as wide as the range of assessments.

Staff employ a range of teaching methods including lectures, seminars, technical workshops, and performance projects.

(R: Dance, Drama & Performing Arts, Doncaster College, 2006).

The main approaches to learning and teaching are clearly articulated in the programme specifications. These include the use of reflective portfolios, problem-based learning, discussion and debate, case studies, computer-assisted learning and skills workshops.

(R: Nursing, Nottingham University, 2006).

The learning and teaching methods used in HLST programmes usually include combinations of some of the following: lectures, workshops and seminars, group and individual tutorials, laboratory practicals, live performance, case-studies, field studies, industrial placements, working in small groups, independent study and research, and technology-enhanced and blended learning.

(SBS: Hospitality, Leisure, Sport & Tourism, 2008).

Traditionally the medical course was divided into a pre-clinical course covering the sciences basic to medicine and the clinical course covering clinical instruction with some of the more applied medical sciences. Over the last two decades the division has been increasingly blurred and most courses now have 'vertical integration' and 'horizontal integration'. The degree of integration varies between medical schools.

(SBS: Medicine, 2002).

The three basic activities of composing, performing and listening are seen to be interconnected in important and fundamental ways, so that the study of music is always an holistic affair.

(SBS: Music, 2008).

Further examples can be found R: Nursing, London Metropolitan University, 2006; R: Nursing, Southampton University, 2006; R: Nursing, University of Central England, 2006; R: Nursing, University of Birmingham, 2006; R: Nursing, University of Surrey, 2006; SBS: Dentistry, 2002; SBS: Veterinary Science, 2002; SBS: Art & Design, 2000; R: Nursing, Coventry University, 2006; SBS: Dance, Drama & Performing Arts, 2007.

As could be expected, especially after reviewing the range of assessment types, a wide variety of teaching and learning approaches are used across the vocational programmes. An indication of this variety can be seen in the non-exhaustive list in the table below:

Studio practice	SBS: Art & Design, 2000
Workshops	SBS: Art & Design, 2000; SBS: Hospitality, Leisure, Sport & Tourism, 2008; SBS: Dentistry, 2002; SBS: Dance, Drama & Performing Arts, 2007; R: Nursing, University of Surrey, 2006; R: Nursing, Coventry University, 2006; R: Dance, Drama & Performing Arts, Doncaster College, 2006
Critiques	SBS: Art & Design, 2000
Tutorials	SBS: Art & Design, 2000; SBS: Veterinary Science, 2002; Hospitality, Leisure, Sport & Tourism, 2008; SBS: Dentistry, 2002; R: Nursing, University of Surrey, 2006; R: Nursing, University of Birmingham, 2006
Seminars	SBS: Art & Design, 2000; SBS: Hospitality, Leisure, Sport & Tourism, 2008; SBS: Dentistry, 2002; R: Nursing, University of Surrey, 2006; R: Dance, Drama & Performing Arts, Doncaster College, 2006
Lectures	SBS: Art & Design, 2000; SBS Veterinary Science, 2002; SBS: Hospitality, Leisure, Sport & Tourism, 2008; R: Nursing, University of Birmingham, 2006; R: Dance, Drama & Performing Arts, Doncaster College, 2006
Practical classes	SBS: Veterinary Science, 2002; SBS: Hospitality, Leisure, Sport & Tourism, 2008; SBS: Dentistry, 2002; SBS: Dance, Drama & Performing Arts, 2007; R: Nursing, University of Surrey, 2006; R: Nursing, University of Birmingham, 2006; R: Nursing, London Metropolitan University, 2006
Self-directed learning	SBS: Veterinary Science, 2002; SBS: Hospitality, Leisure, Sport & Tourism, 2008; R: Nursing, University of Central England, 2006
PBL	SBS: Veterinary Science, 2002; R: Nursing, University of Birmingham, 2006; R: Nursing, Nottingham University, 2006; R: Nursing, London Metropolitan University, 2006

Case-based sessions/Case Studies	SBS: Veterinary Science, 2002; SBS Hospitality, Leisure, Sport & Tourism, 2008; R: Nursing, Nottingham University, 2006; R: Nursing, Coventry University, 2006
Composing	SBS: Music, 2008
Performing	SBS: Music, 2008; SBS: Hospitality, Leisure, Sport & Tourism, 2008; SBS: Dance, Drama & Performing Arts, 2007; R: Dance, Drama & Performing Arts, Doncaster College, 2006
Listening	SBS: Music, 2008
Field studies	SBS: Hospitality, Leisure, Sport & Tourism, 2008
Industrial placements	SBS: Hospitality, Leisure, Sport & Tourism, 2008
Working in small groups	SBS: Hospitality, Leisure, Sport & Tourism, 2008; SBS: Dentistry, 2002; SBS: Dance, Drama & Performing Arts, 2007; R: Nursing, University of Surrey, 2006
Blended (technology-enhanced) learning	SBS: Hospitality, Leisure, Sport & Tourism 2008; R: Nursing, Nottingham University, 2006
Research	SBS: Dance, Drama & Performing Arts, 2007
Analysis of texts/scores/notation	SBS: Dance, Drama & Performing Arts, 2007
Evidence-based learning	R: Nursing, University of Surrey, 2007
Action learning	R: Nursing, University of Surrey, 2007
Guided reflection/Reflective portfolios	R: Nursing, University of Surrey, 2007; R: Nursing, Nottingham University, 2006
Skills laboratories	R: Nursing, University of Surrey, 2007; R: Nursing, Nottingham University, 2006
Virtual ward	R: Nursing, University of Central England, 2006
Task book (unsupervised)	R: Nursing, University of Central England, 2006
Debates/discussion	R: Nursing, Nottingham University, 2006
Critical incident analysis	R: Nursing, Coventry University, 2006

Table 5. *Teaching and learning methods found in the quality documents.*

As discussed in relation to assessment above, although many of these approaches to teaching and learning are to be expected within Higher Education (lectures, tutorials,

seminars), many others seemed to have been developed with a view to learning or practicing practical skills, either alone, or in combination with cognitive or affective aspects. Those teaching and learning activities which seem to be particularly focused on practical skills are shaded in the table above.

Other points of note in relation to teaching and learning methods are who does the teaching (lecturer, clinical demonstrator) (R: Nursing, Southampton University, 2006) although this may of course relate to different elements of the course (theory, practice). Also mentioned is the division or integration of the theory and practice elements of the curriculum (SBS: Medicine, 2002). It would seem that integration is the more desirable and should be aspired to.

A wide variety of teaching and learning methods is in use, some of which are specifically designed to aid the teaching and practice of practical skills.

Teaching & Learning Resources

The provision of the specialist resources required for many vocational subjects was also reflected in the documents. For example:

Currently, the schools have adequate learning resources to support the subject. These include essential resources such as biological science laboratories, clinical facilities, animal hospitals, farms, libraries and information technology (IT).

(SOR: Veterinary Medicine, 2000).

The provision of specialist equipment is a strength in about 35 per cent of institutions, with an impressive range of equipment reflecting the broad spectrum of provision within the subject. The support provided by well-qualified technicians makes a crucial contribution to student learning and includes the management of specialist equipment and workshops, health and safety and demonstrating techniques and use of equipment.

(SOR: Art & Design, 2000).

...learning opportunities in specialised facilities, for example, sports science laboratories, training kitchens and restaurants, sports participation facilities, leisure facilities, venues and event specific facilities.

(SBS: Hospitality, Leisure, Sport & Tourism, 2008).

Practical sessions involve a mix of training, for example, use of computer software, dance technique, theatre lighting and sound engineering alongside creative work, such as choreography, devised digital performance, instrumental and vocal performance.

(R: Dance, Drama & Performing Arts, Doncaster College, 2006).

The Academy has distinctive, specialist resources and has, hitherto, been able to concentrate its activities largely in one location, providing a useful focus for the performing arts, for its students and the greater public. However, expanding student numbers and courses have meant that the present everyday facilities (such as practice rooms and rehearsal space) are under pressure at peak times.

(IR: RSAMD, 2004).

Further examples can be found at SOR: Dentistry, 2000; R: Nursing, University of Surrey, 2006; R: Art & Design, City College Manchester, 2005; SOR: Other Subjects Allied to Medicine, 2000.

The issues concerning teaching and learning resources will now be discussed briefly; in particular, those special resources which are necessary to deliver the practical elements of the vocational programme. Once again, there is acknowledgement from many of the reviewers that these specialist teaching areas and the equipment in them are necessary for the delivery of high quality vocational education (SOR: Art & Design, 2000; R: Nursing, University of Surrey, 2006; R: Art & Design, City College, Manchester, 2005) and issues concerning the strain placed on these resources by increasing student numbers are seen as an area of concern (IR: RSAMD, 2004). Another area of concern is the currency of such specialist equipment (SOR: Other Subjects Allied to Medicine, 2000). The availability of

technical support staff is seen as very valuable (SOR: Art & Design, 2000).

The table below gives an indication of the range of specialist resources required; once again, this list is not exhaustive.

Laboratories (science)	SOR: Veterinary Medicine, 2000; SOR: Dentistry, 2000; SBS: Hospitality, Leisure, Sport & Tourism, 2008
Clinical facilities	SOR: Veterinary Medicine, 2000; SOR: Dentistry, 2000; R: Nursing, University of Surrey, 2006
Animal hospitals	SOR: Veterinary Medicine, 2000
Farms	SOR: Veterinary Medicine, 2000
Libraries	SOR: Veterinary Medicine, 2000
IT	SOR: Veterinary Medicine, 2000; SOR: Dentistry, 2000; R: Dance, Drama & Performing Arts, Doncaster College, 2006; R: Art & Design, City College Manchester, 2005
Resource Centre	SOR: Dentistry, 2000; R: Art & Design, City College Manchester, 2005
Training kitchens & restaurants	SBS: Hospitality, Leisure, Sport & Tourism, 2008
Leisure/sports facilities	SBS: Hospitality, Leisure, Sport & Tourism, 2008
Event venues	SBS: Hospitality, Leisure, Sport & Tourism, 2008
Theatre, light and sound	R: Dance, Drama & Performing Arts, Doncaster College, 2006
Performance venues	R: Dance, Drama & Performing Arts, Doncaster College, 2006
Rehearsal space	IR: RSAMD, 2004
Practice rooms	IR: RSAMD, 2004
Studios	R: Art & Design, City College Manchester, 2005

Table 6. *Teaching and learning resources found in the quality documents.*

Within Higher Education, facilities such as libraries and IT are to be expected and will be in use across all subjects. However, the table above indicates the varied specialist facilities required within vocational programmes, and those which seem to be particularly appropriate for the teaching and learning of practical skills are shaded.

A wide range of specialist teaching facilities is available, some of which are specifically designed to aid the teaching and practice of practical skills.

Chapter 6: Findings and Analysis: Novice and Expert Videos.

Introduction.

Novices were filmed over a continuous series of 11 weeks at a Glasgow College of FE. The class was a practical kitchen class, lasting three hours, for first year SQA HNC/D students at Level 7. The four students filmed were chosen at the suggestion of the expert lecturer as he knew that these four had no previous formal training in the kitchen and could therefore be classed as Novices.

This resulted in a vast amount of rich, detailed data. It was decided that justice could not be done to all this data within the confines of an EdD thesis: therefore analysis was concentrated on Week 1 and Week 11, in order that differences could be identified between the beginning of formal learning (the Novice stage) and the end of the Unit, when it was hoped that the Novices would have progressed to the Advanced Beginner stage. In addition, the analysis focused on manipulative skills (especially knife skills) concerned with food preparation, rather than on the cookery processes being learned. Although both include psychomotor skills, the application of these can be more clearly seen during food preparation.

It is important to note that although, particularly by Week 11, clear differences in ability could be detected between the Novices, this factor was not important to this research, which focuses on the development of skills over a period of time. Therefore no analysis has been undertaken which directly compares the performance of one Novice against the other; rather, the performance of the Novices from Week 1 to Week 11 is compared, which in turn is compared with that of the Experts. Any comparison of Novices against one other would relate to grading within a level, and not to the differentiation of levels themselves, which is the focus of this study.

In addition, two chef lecturers (Experts) at the same College were also filmed undertaking a short demonstration of manipulative and knife skills. It was hoped that

this would provide some criteria which could be applied to the Expert stage. Criteria were coded using NVivo8.

In order to present the results as clearly and meaningfully as possible, this Chapter (analysis of video data) will be presented in the same way as Chapter 5 (analysis of quality documents) and Chapter 7 (analysis of interview data); each has been divided into sections related to the four research aims. Within each section, example responses will be given, and then references to where other similar responses can be found. This will be followed by the analysis of the results in that section, and a brief summary. The summary can be found in a box at the end of each section or sub-section. If a section contains several sub-headings, results, analysis and summary will all be under that sub-heading. Chapter 8 contains the cross-case synthesis of all the primary data, and the discussion takes place in Chapter 9.

Research Aim 1: To investigate the place of psychomotor skills within vocational education curricula and how these are viewed by different bodies.

From the beginning of the first class, emphasis is placed on psychomotor skills within the SQA Unit. For example, within the first few seconds of the first class:

Expert demonstrates correct way to hold knife with underpinning knowledge giving reasons for the correct hold.

(NW1D1: 0.05)

Expert demonstrates knife action on chopping board and correct holding of knife.

Clearly demonstrates and also explains why do it like this – underpinning knowledge

Expert demonstrates correct movement of the knife when chopping

Expert explains safety aspects of the correct placement of the other hand

Expert explains using the 2 hands correctly in cutting a carrot

Expert explains that at this stage the most important thing is to use the correct action- getting this right is more important than speed or the correct result

(NW1D1: 21.25–23.29)

Novices practice the chopping action and holding the knife correctly but with no vegetables. Some seem to find it hard and are moving slowly

(NW1D1: 24.10)

Expert comes round the class and helps Novices to hold the knife correctly and guides their hands into correct movement

(NW1D1: 24.45)

As stated in Chapter 1, 48.5% of the Learning Outcomes within HNUs relating to the vocational areas of interest to this study contain practical psychomotor skills, and the HN Unit undertaken by the students in the video study is no exception. From the very beginning of the first class the Expert lecturer spends time and effort demonstrating the skills, emphasising the importance of the correct technique at this stage, and explaining the reasons for doing things in a certain way at the same time. In addition, the way the class is structured allows the Novices to learn one set of skills at a time, and then have time to practice it, perhaps on a range of items, before the next skills is demonstrated and practiced.

It appears, therefore, that SQA does realise the importance of practical psychomotor skills of this area of the curriculum and the emphasis in this Unit is firmly on these skills.

<p>This could only be viewed in the context of the SQA Unit being undertaken: however, in this Unit at least, the importance of practical psychomotor skills within kitchen practice was clearly acknowledged by the awarding body.</p>

Research Aim 2: To explore the criteria that might indicate a clear progression in psychomotor skills from one level of learning to the next.

Four physical criteria were identified from the literature: accuracy, correct use of tools and equipment, reliability and speed. When the video data was being analysed, a further criterion was added: that of correct hand or body position or movement. In

addition, other criteria included the complexity of the task(s) been undertaken, and the degree of autonomy, the affective aspects (creativity in this case), evidence of underpinning cognitive knowledge and reflective practice. Once again, a further criterion was added whilst analysing the video data; that of team working. Findings will therefore be reported taking each of these criteria in turn.

Physical criteria: accuracy

Accuracy is used to describe the criterion of getting the right result using the right method. Some typical examples are listed below:

*Ns prepare to wash vegetables
Ns correctly top and tail carrots and wash them
N starts to peel carrot. Does not use correct method.
(tries to peel whole carrot rather than first one half, then the other as demonstrated by E).
Both Ns filmed make this same mistake. As they share a workstation it is likely one thought the other was right*

(NW1D1: 10.47-11.46)

E can be heard telling the class to do it slowly but do it right

(NW1D1: 10.47-11.46)

*N2 chops onion using correct technique - motion appears much smoother than Week 1.
N1 chops onion using correct technique, hand position, smooth movement*

(NW11D2: 04.30-04.54)

*Starts Julienne of carrot
Julienne of carrot complete
Starts Brunoise of carrot
Brunoise of carrot complete
Brunoise of potato complete. Same time and same size exactly as carrot
Starts Brunoise of onion
Brunoise of onion complete). Also same size as carrot and potato
Starts to turn potato 1 (more complex skill); turned potato 1 complete
Starts to turn potato 2
Turned potato 2 complete exact same size and shape as potato 1.*

(E2: 0.47 – 5.05)

Other examples can be found at NW1D1: 28.47; NW1D1: 31.25; NW1D1: 37.25; NW1D1: 43.23; NW1D1: 44.00; NW; 1D2: 04.45; NW1D2: 09.25 – 10.30; E1: 1.07.

When the results from Week 1 of the Novices video are examined, it would appear that accuracy is a criterion which they are struggling to achieve (NW1D1: 10.47-11.46), but are aware of its importance (NW1D1: 10.47-11.46): this is emphasised also in the teaching of the Expert lecturer during the class (NW1D1: 44.00). By Week 11, however, accuracy is achieved on most occasions (NW1D2: 04.30-04.54).

When the Expert videos are examined, accuracy is achieved every time (E1: 1.07), even when more complex tasks are been undertaken across a range of items (E2: 0.47 – 5.05). It would seem from the video evidence, therefore, that accuracy is a desirable criterion, and one with which novices struggle initially but soon achieve with the less complex skills. Accuracy is still important at the Expert stage but is now achieved apparently automatically across more complex skills and across a wide range of items.

Accuracy was identified as an important criterion and accuracy increased over the three levels being analysed.
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Physical criteria – correct use of tools and equipment

This criterion means using the knife, peeler or other implement, the correct chopping board and pans and dishes for cooking and serving. For example:

E demonstrates preparing carrot for peeling and includes correct knife selection
E demonstrates how to use peeler and starts peeling carrot
E finishes peeling carrot
E demonstrates preparing celery - cutting off ends and de-stringing.
E demonstrates how to deal with leeks
E demonstrates preparing leek - includes safety aspects of using the knife
E demonstrates potato preparation
E demonstrates correct equipment for peeling potato - peeler
E demonstrates peeling turnip - uses another knife.

(NW1D1:04.34–08.37)

N1 washes potato. The 2 Ns then discuss which knife to use for the potato. N2 washes potato

(NW1D1: 12.47-12.57)

N2 starts Julienne of turnip
At the beginning does not use correct knife technique but self-corrects as goes along. Julienne strips are too big at the start but get thinner as goes on

(NW1D1: 44.00)

N1 and N3 are cutting radishes into decorative shapes, using a smaller knife, holding the knife and the radish differently - quite different technique to chopping and slicing on the chopping board

(NW11D2: 19.10)

Other examples can be found at NW1D1: 0.05; NW1D1: 50.28; NW1D2: 00.51.

Novices working in the kitchen for the first time in Week 1 are faced with a wide array of tools, implements and equipment. It is necessary for them to be able to select the correct tool(s) and equipment for the task, and then use it correctly and safely. In Week 1, the Expert has to explain what to use and how to use it (NW1D1: 0.05; NW1D1:04.34 – 08.37; NW1D1: 44.00). Later in the class, the Novices are still unsure about which knife to use and ask each other (NW1D1: 12.47-12.57). When using the tools, there are occasions during the first week when these are not used correctly as demonstrated by the Expert (NW1D1: 50.28; NW1D2: 00.51). By Week 11, however, this process has become much more secure and the Novices can select the correct tools and equipment even for a slightly different task (NW11D2: 19.10).

The correct use of tools and equipment was identified as an important criterion and increased over the three levels being analysed.

Physical criteria: reliability

Reliability means to sustain accuracy over a period of time; in other words, to get the right result using the same method every time. Examples include:

Starts Brunoise of carrot
Brunoise of carrot complete
Starts Brunoise of potato
Brunoise of potato complete. Same time and same size exactly as carrot

(E2: 1.14–2.34)

Starts to turn potato 1 (more complex skill)
Turned potato 1 complete
Starts to turn potato 2
Turned potato 2 complete; exact same size and shape as potato 1.

(E2: 3.51-5.05)

Ns peel shallots - they remember how they did this with an onion and use the same technique - have transferred the skill

(NW1D2: 09.25)

Reliability can best be judged over a period of time. Because of the range of different tasks being learned by the Novices, this was the most difficult of the physical criteria to judge. However, there was some evidence that the Novices realised that the skills learned had to be repeated in the same way (NW1D2: 09.25). Also, when the Expert videos were analysed, it was then clear that they could repeat the same actions across a range of items producing the exact same result every time (E2: 1.14 – 2.34; E2: 3.51-5.05)

Reliability was possibly observed in the Expert videos and there was some less conclusive evidence in the Novice videos.

Physical criteria: speed

It is expected that the speed with which tasks can be completed accurately will increase from Level to Level. For example:

N1 finishes carrot (30 seconds)
N2 finishes carrot (44 seconds)

(NW1D1: 12.16-12.28)

Ns start cutting Paysanne of small carrot
N1 has correct technique and result but slow
N1 finishes Paysanne of small carrot (1 minute 13 seconds)
N1 starts Paysanne of half a large carrot - uses correct technique
N1 completes Paysanne of half a large carrot (1 minute 39 seconds)

(NW1D1: 28.47-31.13)

N3 finishes Brunoise of carrot (1 minute 24 seconds)

(NW11D1: 51.52)

Carrot squared off
Holding carrot correctly - safety
Brunoise of carrot complete (42 seconds)
Starts Macedoine of carrot
Macedoine of carrot complete (17 seconds)
Starts Paysanne of carrot
Paysanne of carrot complete (1 minute 39 seconds)
Starts Paysanne of potato
Paysanne of potato complete (43 seconds)
Starts Julienne of carrot
Julienne of carrot complete (50 seconds)
Starts Paysanne of celery
Paysanne of celery complete (11 seconds)

(E1: 0.25-4.55)

Other examples can be found at NW1D1: 24.10; NW1D1:36.57-44.00; NWD1: 48.05; NW1D1: 50.15-50.23; NW11D1: 36.46; E2: 0.09-3.24; NW1D1: 35.35; NW11D1: 13.27; NW1D1: 20.37-21.06.

During the Week 1 class, the Expert can be heard telling the Novices that it is more important to get the task right than do it quickly (NW1D1: 35.35). The implication of

this is that at the Novice stage, accuracy is more important than speed. However, the speed of the Novices does increase between Weeks 1 and 11, which can then also be compared with the speed of the Experts undertaking similar tasks. Some examples can be seen in the table below:

Task	Novices Week 1	Novices Week 11	Experts
Brunoise of potato	4 minutes 14 seconds (NW1D1:36.57-44.00)		44 seconds (E2: 0.09-3.24)
Julienne of leek	1 minute 42 seconds (NW1D1:36.57-44.00)		9 seconds (NW1D1: 50.15-50.23)
Brunoise of carrot		N1 22 seconds (NW11D1: 13.27) N2 48 seconds (NW11D1: 36.46) N3 1 minute 24 seconds (NW11D1: 51.52)	E1 42 seconds (E1: 0.25-4.55) E2 44 seconds (E2: 0.09-3.24)

Table 7. *Examples of speed comparisons in the video data.*

Although this evidence is not conclusive it does seem to indicate that speed increases with repetition of tasks and experience.

Speed was identified as being less important than accuracy in Week 1 of the Novice videos. There is some evidence that speed does increase with practice and experience.

Physical criteria: correct hand/body position or movement

This criterion was not identified from the literature but was noticed in the direct observation of both Novices and Experts and therefore the coding was added to NVivo8. For example:

*E demonstrates knife action on chopping board and correct holding of knife.
Clearly demonstrates and also explains why do it like this - UK
E demonstrates correct movement of the knife when chopping
E explains safety aspects of the correct placement of the other hand
E explains using the 2 hands correctly in cutting a carrot
E explains that at this stage the most important thing is to use the correct action
- getting this right is more important than speed or the correct result
Ns practice the chopping action and holding the knife correctly but with no
vegetables
Some seem to find it hard and are moving slowly
E comes round the class and helps Ns to hold the knife correctly and guides their
hands into correct movement*

(NW1D1: 21.25-25.12)

*E demonstrates parsley preparation and chopping
Uses the same knife as for vegetable chopping but holds it differently - different
technique also*

(NW1D2: 00.51)

*N2 starts chopping carrots for Brunoise - uses correct knife, correct hand
position, correct motion*

(NW11D1: 35.58)

*Starts to turn potato - more complex skills - different hold of knife -
requires 2 hands to work in different ways unlike earlier cuts - where just holding
with other hand*

(E1: 5.45)

Other examples can be found at NW1D1: 35.35; NW1D1: 37.38; NW1D1: 44.00;
NW1D1: 50.28; NW1D1: 52.24- 56.18; NW1D2: 10.30; NW11D1: 33.04;
NW11D1: 47.15; NW11D1: 49.38; NW11D2: 4.30-4.54; NW11D2: 14.20;
NW11D2: 18.25; NW11D2: 19.10; NW11D2: 24.16; E2: 8.04.

As stated above, this criterion was added after reviewing the video evidence. It was realised that not only was the correct use of tools and equipment important, but also the way in which other items such as ingredients were held, and the correct movements with the tools used. Both of these were found difficult by the Novices in Week 1 (NW1D1: 35.35; NW1D1: 37.38; NW1D1: 52.24- 56.18) and the Expert not only had to demonstrate but also to come round the class and guide the Novices

hands into the correct position and movement (NW1D1: 21.25-25.12). However, by Week 11, both these aspects had improved considerably (NW11D1: 35.58; NW11D1: 47.15; NW11D2: 4.30-4.54); whilst when the Expert videos were analysed, the correct and smooth movements could be observed even when a much more complex task was being executed (E1: 5.45; E2: 8.04).

This new criterion was developed through the analysis of the video data. The correct hand position and movement has to be learned and practiced in addition to the correct use of tools and equipment. This criterion also increased over the three levels being analysed.

Other criteria: complexity

This criterion means both the difficulty of one particular skill and also the ability to perform several tasks at the same time.

At the start of the class a sheet shows OPS 5 is one of the units being done - list of tasks to be done and equipment needed:30 tasks listed

(NW11D1: 02.36)

All Ns are making bread and preparing lasagne sheets at the same time

(NW11D1: 23.26)

N4 observed swapping continually between whisking vinaigrette and stirring sauce for lasagne

(NW11D2: 09.23)

Starts to turn potato - more complex skills - different hold of knife - requires 2 hands to work in different ways unlike earlier cuts -where just holding with other hand

Turned potato complete

Starts to turn mushroom

Turned mushroom complete

(E1: 05.45-07.19)

Other examples can be found at NW11D1: 42.15; NW11D2: 01.38; NW11D2: 30.02-33.34; E2: 03.51-05.05; E2: 08.04-08.26.

During the Week 1 class, Novices were taught and practised one skill at a time, and these skills appeared individually to be not too difficult. By Week 11, however, a clear change could be seen as the Novices were undertaking several different tasks at the same time as they made and assembled several more complex dishes during the course of the same class (NW11D1: 23.26; NW11D1: 42.15; NW11D2: 01.38; NW11D2: 09.23; NW11D2: 30.02-33.34). The Organisation of Practical Skills (OPS) Unit by this stage is not OPS 3 as at the beginning of the course, but OPS 5 which includes 30 tasks (NW11D1: 02.36).

Complexity can also be seen as a means of differentiating individual tasks. For example, in the Expert videos, the Experts demonstrated not only some of the cuts of vegetables they taught in the Novice class, but also much more complex ones which would be taught at a higher level (E1: 05.45-07.19; E2: 03.51-05.05; E2: 08.04-08.26).

The complexity both of individual tasks (seen in the Expert videos) and the number of tasks being undertaken at the same time (between Week 1 and Week 11 of the Novice videos) increased over the three levels being analysed.

Other criteria: degree of autonomy

This criterion is concerned with the ability to work on one's own, without being told what to do continually, and to consult reference material where necessary.

Expert demonstrates correct way to hold knife with underpinning knowledge giving reasons for the correct hold
E demonstrates how to sharpen knife
E shows blackboard displaying basic cuts of vegetables, with their French terms and description.
Explains they need to know the terms, what they mean and be able to do these cuts correctly
E explains method of cleaning vegetables; wash, peel and re-wash to be done at a sink
E says is going to demonstrate peeling an onion and explain while doing it
E demonstrates peeling onion and also shows correct knife selection
E finishes peeling onion
E demonstrates preparing carrot for peeling and includes correct knife selection
E demonstrates how to use peeler and start peeling carrot
E finishes peeling carrot
E demonstrates preparing celery - cutting off ends and de-stringing. Also explains how celery is grown – Underpinning Knowledge
E demonstrates how to deal with leeks
E demonstrates preparing leek - includes safety aspects of using the knife
E demonstrates potato preparation
E demonstrates correct equipment for peeling potato - peeler
E demonstrates peeling turnip - uses another knife.
Then shows one completely prepared so students can see the end result

(NW1D1: 0.05-08.37)

E comes round the class and helps Ns to hold the knife correctly and guides their hands into correct movement

(NW1D1: 24.45)

Ns working directly from sheet - E not speaking or coming round

(NW11D1: 15.01)

N2 measures out a quantity of milk having checked the amount in a book

(NW11D1: 19.56)

E tells the students they can choose their own break time as long as they don't go away and leave their sauce cooking on the stove

(NW11D2: 0.48)

Other examples can be found at NW1D1: 22.05-23.29; NW1D1: 25.12-25.25;
NW1D1: 26.28-28.19; NW1D1: 33.10-34.02; NW1D1: 42.00-43.15; NW1D1:
52.24; NW11D1: 17.16.

The results for this criterion were clear. During Week 1, the Novices watched a task being demonstrated and explained by the Expert, and then went away to practice and make an attempt at this task themselves (NW1D1: 0.05-08.37; NW1D1: 22.05-3.29; NW1D1: 24.45; NW1D1: 25.12-25.25; NW1D1: 26.28-28.19; NW1D1: 33.10-34.02; NW1D1: 42.00-43.15; NW1D1: 52.24). In addition, information and terminology was displayed on the blackboard at the front of the class.

By Week 11, however, there was no demonstration and little explanation from the Expert. Instead, Novices worked from their own sheet of tasks, sometimes looking up a recipe in their textbook. The Expert never stopped the class, but came round from time to time to answer questions; and when he did give explanations, the class listened whilst carrying on with their work (NW11D1: 15.01; NW11D1: 17.16; NW11D1: 19.56).

The Novices were even given the choice of when to take their break, based on the point they had got to in their own individual work (NW11D2: 0.48). The degree of autonomy achieved by the Novices in Week 11 was clearly much greater than in Week 1.

The degree of autonomy shown by the Novices clearly increased from Week 1 to Week 11.

Other criteria: affective aspects: creativity

Some evidence of this criterion was identified in the final week.

N2 slices cucumber - has trimmed it slightly differently from N4 to give a different decorative edge - uses correct knife, technique, motion etc

(NW11D2: 18.25)

N1 and N3 are cutting radishes into decorative shapes, using a smaller knife, holding the knife and the radish differently - quite different technique to chopping and slicing on the chopping board

(NW11D2: 19.10)

N1 garnishes her salad with cucumber and radishes on the top
N3 garnishes her salad - differently to N1, with cucumber slices round the edge of the dish

(NW11D2: 25.50-26.11)

Other examples can be found at NW11D2: 20.19; NW11D2: 23.50.

This criterion was not observed at all during the Week 1 class, but some evidence of this criterion was identified in the final week. Novices were given the opportunity to decorate and garnish their salads differently, choosing different items and cuts for the garnish (NW11D2: 18.25; NW11D2: 19.10; NW11D2: 20.19). In addition, the salads were presented slightly differently (NW11D2: 23.50; NW11D2: 25.50-26.11). At this early stage, whilst basic techniques were still being mastered, the opportunities for creativity were limited, but there was clearly a difference in approach from Week 1 to Week 11.

Some evidence of creativity was observed in Week 11 of the Novice videos.

Other criteria: evidence of underpinning cognitive knowledge

No assessment was observed, so the novices' knowledge could not be judged directly. However, when the Week 1 Novice class was observed, the Expert included underpinning knowledge as part of the practical class:

Expert demonstrates correct way to hold knife with underpinning knowledge giving reasons for the correct hold.

(NW1D1: 0.05)

E shows blackboard displaying basic cuts of vegetables, with their French terms and description.

Explains they need to know the terms, what they mean and be able to do these cuts correctly

(NW1D1: 1.01)

E demonstrates preparing celery - cutting off ends and de-stringing. Also explains how celery is grown

(NW1D1: 5.29)

E demonstrates with a shallot - how to stud it with a bay leaf and cloves and how this is used to flavour a white sauce

(NW1D2: 07.50)

Other examples can be found at NW1D1: 21.25-23.29; NW1D1: 25.12-25.25; NW1D1: 42.00-43.15; NW1D1: 52.24; NW1D2: 02.30.

As the Expert was demonstrating various tasks, at the same time he gave information about how the vegetables were grown (NW1D1: 5.29), in what dishes they might be used (NW1D1: 25.12-25.25; NW1D1: 52.24; NW1D2: 02.30; NW1D2: 07.50), the uses of various pieces of equipment (NW1D1: 0.05; NW1D1: 21.25-23.29), the correct French terms (NW1D1: 1.01) and various safety aspects (NW1D1: 21.25-23.29; NW1D1: 52.24). These were mentioned as and when it was pertinent to the task being undertaken, so the Novices could see the relevance of the knowledge and how the theory related to practice.

<p>The Expert included underpinning knowledge whilst teaching the Novice class, relating this knowledge to the tasks being undertaken.</p>
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Other criteria: reflective practice

This was observed at the end of the Week 11 class:

*The whole class starts to display their finished products
All lasagnes look the same
Salads are garnished differently
Rolls are similar though there are some slight variations in shape
The finished products from the whole class are displayed ready to evaluate*

(NW11D2: 38.17-38.29)

Evidence of this criterion was observed in the Week 11 of the Novice classes (NW11D2: 38.17-38.29). At the end of the class, all the Novices brought their completed dishes to the front of the training kitchen and displayed them. They then commented on their own and other's dishes, as did the Expert chef lecturer. It would seem that reflective practice was encouraged but that the Novices were only just starting to be able to do this at the end of their Unit.

This was encouraged by Expert through the structure of the class; the Novices were showing some evidence of this by Week 11.

Other criteria: team working

This criterion was also not identified in the literature but noted during the direct observation of the Novices in Week 11 and added to the NVivo8 coding.

N1 asks N2 how much milk to put in the sauce

(NW11D1: 20.39)

N3 asks N4 to check the consistency of her dough

(NW11D1: 27.16)

N1 checks consistency of N2 and N4s dough

(NW11D1: 32.00)

N4 helps N2 to finish lasagne by scraping the last bit of white sauce out of the pan

(NW11D2: 34.05)

As stated earlier, this criterion was also not identified in the literature but noted during the direct observation of the Novices in Week 11. As explained above under the criterion of degree of autonomy, the Novices by Week 11 had become much more independent and much less dependent on the Expert lecturer. They therefore tended ask each others' opinions of their work (NW11D1: 27.16; NW11D1: 32.00) and check any issues of which they were not certain (NW11D1: 20.39). In addition, they helped each other when needed (NW11D2: 34.05). This might indicate that they

were more confident of each others' abilities as well as their own, and also that they were beginning to understand the cooperative nature of kitchen work where a team approach is essential.

This criterion was also added when analysing the video data. The Novices in Week 11 showed evidence of team working which was not observed in Week 1.

Research Aim 3: To explore ways in which such criteria might be made explicit through being described in learning outcomes: or, if not, of being codified by some other means.

The class being observed were undertaking a combination of Units that were integrated within the practical class. The Expert identified the following Learning Outcomes from one of the Units as being the most relevant. The Unit Specification (Organisation of Practical Skills 3: 5130196) can be found at Appendix XII. This is an "old-style" Unit and therefore contains Performance Criteria as well as Learning Outcomes. In this Unit, students must prepare, plan and carry out tasks that require a minimum of 12 components and at least 18 processes in their production, using safe working practices.

By week 11, the class had moved on to a more advanced version of this Unit:

The sheet for today's class shows OPS 5 is one of the units being done - list of tasks to be done and equipment needed: 30 tasks listed

(NW11D1: 12.36)

Although this Unit uses some of the words that might be expected in a largely practical Unit ("carry out", for example), the Learning Outcomes rely on both the Performance Criteria and the Range Statements for the indication of level. LO4 (using safe working practices), for example, could be expected to be found in any kitchen Unit, and is only appropriate to the level if the range of tasks needing to be undertaken safely is taken into account. In fact, the level is indicated in this Unit

primarily by the number and complexity of the tasks to be undertaken. In this case, the Learning Outcomes for this Unit do not assist greatly with the task of differentiating between levels through Learning Outcomes. However, the use of complexity as a criterion may prove a useful indication.

The SQA Unit being taught in the observed class did not make the criteria explicit in the Learning Outcomes: rather it relied on the Performance Criteria and Range Statements, and the level was indicated only through the complexity and number of tasks being undertaken.

Research Aim 4: To consider the implications of the above for the teaching and assessment of psychomotor skills in vocational education.

Teaching and learning approaches

There were many examples of the teaching and learning approaches to practical psychomotor skills in the Novice videos. For example:

E demonstrates correct movement of the knife when chopping
E explains safety aspects of the correct placement of the other hand
E explains using the 2 hands correctly in cutting a carrot
E explains that at this stage the most important thing is to use the correct action - getting this right is more important than speed or the correct result

(NW1D1: 22.05- 23.29)

E comes round the class and helps Ns to hold the knife correctly and guides their hands into correct movement

(NW1D1: 24.45)

E explains Mirepoix
This is quicker, easier, 'more chunky', not so fiddly, exact shape less important because of its use - explains why
E demonstrates the different ways of slicing an onion, especially how to hold it safely whilst slicing

(NW1D1: 52.24)

Other examples can be found at NW1D1: 0.05-8.37; NW1D1:25.12-25.25; NW1D1: 26.28-28.19; NW1D1: 33.10-34.02; NW1D1: 42.00- 43.15; NW1D2: 0051-02.30; NW1D2: 07.50.

Examples from Week 1 can usefully be compared with examples from Week 11:

*Ns working directly from sheet - E not speaking or coming round
E can be heard answering questions in the background
E can be heard in the background checking that all the Ns know how to do the next task*

(NW11D1: 18.04)

*E comes round and helps N3 with shaping dough for rolls - explains why as he demonstrates
E explains to whole class about dough fermentation and answers questions but Ns all keep on working while listening*

(NW11D1: 36.54-38.06)

During the Week 1 class, a clear teaching and learning strategy could be observed. The Expert took each task in turn, explained it together with any relevant underpinning knowledge, demonstrated it, and then the Novices went away to practice the task and make an attempt at completing it (NW1D1: 22.05- 23.29; NW1D1:25.12-25.25; NW1D1: 26.28-28.19; NW1D1: 33.10-34.02; NW1D1: 52.24; NW1D2: 0051-02.30; NW1D2: 07.50). The Expert went round the room as they were doing this, giving advice, answering questions and in some cases guiding the hands of the Novices into the correct positions and movement (NW1D1: 24.45). Sometimes, the task needed to be demonstrated more than once (NW1D1: 42.00-43.15). The tasks were dealt with individually, although their end use was explained. The dish for the first week was Cream of Vegetable Soup, so the vegetables cut by the Novices were used to make this soup as an end product: however, as the soup was a purée, the accuracy of the cuts was not important.

By contrast, in the Week 11 class, the Expert was confident enough of the Novices' skills to let them work alone with some guidance and advice (NW11D1: 15.01-16.03; NW11D1: 18.04; NW11D1: 36.54-38.06). In Week 11, the Novices made Lasagne, Bread Rolls, Salad and a Vinaigrette Dressing with minimum input from

the Expert.

Week 1	Week 11
Individual steps	Holistic approach to tasks
Simple tasks	Complex tasks
Tasks performed slowly and awkwardly	Tasks performed more quickly and smoothly
Individual tasks	Many tasks simultaneously
Constant Expert demonstrations and explanations	Self-reliance
Constant instructions from Expert	Novices looking up information themselves in books and reference sheets

Table 8. *Differences in teaching and learning approaches between Week 1 and Week 11 of the Novice videos.*

Teaching and learning resources

The Novice classes observed took place in a fully-equipped training kitchen, where a full range of commercial equipment, tools and implements were available. The Novices were put in groups of four; each four was allocated a station with its own preparation area, sink, cooking equipment and storage area. In addition, further specialist equipment was available to be moved around the groups.

All Novice classes observed took place in the specialised teaching and learning facility of a fully-equipped training kitchen.
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Chapter 7: Findings and Analysis: Interviews.

Introduction

Five interviews with Experts were undertaken as part of the Case Study approach to this research. The five experts consisted of two chef lecturers from the college in which the video data was collected, a Curriculum Adviser from the QCDA (a Sport and Contemporary Dance specialist), the Syllabus Director of the ABRSM, and Louise Murray, a member of the Board of Trustees from the RAD and an experienced teacher. The interviews followed a semi-structured format which allows for comparison of answers but also allows for each Expert to give additional information pertinent to their particular area of expertise. Due to scheduling difficulties, the interviews with the QCDA representative was undertaken on the telephone; the other four interviews were face-to face. The interview questions (three slightly different versions: one for expert chefs, one for the RAD and ABRSM and one for the QCDA) and all five transcripts can be found at Appendix XIII. These were also coded using NVivo8. In addition, further information about the examination syllabi of the ABRSM can be found at ABRSM (2010b), ABRSM (2010c) and ABRSM (2010d): and information about the RAD syllabi can be found at RAD (2010a); RAD (2010b); RAD (2010e) and RAD (2010f). The interviews with the RAD and ABRSM refer in places to their syllabi with which the interviewer was already familiar; therefore no direct questions were asked about this.

In order to present the results as clearly and meaningfully as possible, this Chapter (analysis of interview data) will be presented in a similar way to Chapter 5 (analysis of quality documents) and Chapter 6 (analysis of video data); each has been divided into sections related to the four research aims. Within each section, sample responses will be given. This will be followed by the analysis of the results in that section, and a brief summary. If a section contains several sub-headings, results, analysis and summary will all be under that sub-heading. The summary can be found in a box at the end of each section or sub-section. Chapter 8 contains the cross-case synthesis of all the primary data, and the discussion takes place in Chapter 9.

Research Aim 1: To investigate the place of psychomotor skills with vocational education curricula and how these are viewed by different bodies.

This subject was particularly relevant to the QCDA, the ABRSM and the RAD; in addition, the two chef lecturers taught exclusively on SQA Units. The representatives of these bodies were asked to explain their involvement with psychomotor skills and with the allocation of these skills to levels. In respect of the ABRSM and the RAD, this question is hardly needed as a scrutiny of their syllabi (ABRSM, 2010b; ABRSM, 2010c; ABRSM, 2010d; RAD, 2010a; RAD, 2010b; RAD, 2010e; RAD, 2010f) will show.

Scrutinises the qualifications submitted to QCDA in this subject area in order to advise on their allocation to the appropriate level. When scrutinising, looks for key words – but the words used in cognitive qualifications don't exist for practical ones. The Subject Experts use their instinct sometimes which is imperfect. A recognised degree of subject expertise is required to allocate qualifications in that subject to levels.

(QCDA: Q.4)

Well, I suppose, in a nutshell, we have to say it's an art and not a science, when we are selecting repertoire; and within the repertoire, is embedded a certain level of dexterity; of physical ability to manipulate, whether its fingers, or lips, or tongue or whatever it might be. For example, when we were looking at allocating UCAS points to the Grades, I was part of the Expert group that was looking at that, and we made a comparison there between expectations among different Awarding Bodies, but also between GCSE and A level, and the Grades and that was all factored in.

(ABRSM: Q.5 & Q.7)

For the RAD, this is decided by a committee of experienced teachers and examiners, who know from experience the suitability of certain techniques to certain levels. More recently, academics have been involved in this, particularly in terms of child physical development.

(RAD: Q.4)

*Curriculum Leader in Professional Cookery.
75% of my timetable is teaching practical skills. Groups taught – Higher
Professional Cookery (2nd year craft students) (L6) and also HNC (L7) and HND
(L8) students.*

(E1: Q. 3 & Q.4)

*I'm responsible for all the Professional Cookery programmes, and all the Food
Science Programmes.
At the moment, I teach a practical restaurant class which is a 5 hour practical,
and we serve 40 covers a day in Scholar's restaurant.*

(E2: Q.3 & Q.4)

Both the ABRSM and the RAD provide a syllabus that is used by teachers to structure tuition and classes, and which is then examined by examiners appointed by the body. The ABRSM offers mainly practical examinations (ABRSM, 2010c; ABRSM, 2010e), though it also offers examinations in music theory. Some of its higher level examinations, such as the Diplomas (ABRSM, 2010b), include written work. The RAD examinations are entirely practical throughout (RAD, 2010a; RAD, 2010b; RAD, 2010e; RAD, 2010f); there is no written work or theory which is examined separately. Therefore, the main work of these two bodies is to examine practical psychomotor skills in music and classical ballet respectively, and any affective and cognitive aspects are expected to be shown in performance. With respect to the QCDA, it was acknowledged that they included practical examinations such as those offered by the ABRSM and the RAD on the NQF, which meant that these qualifications had to go through a levelling process (QCDA Q.4). The two Expert Chef Lecturers, as well as their curriculum and section responsibilities (E1: Q.3; E2: Q.3) both taught a large number of hours of practical kitchen classes every week across a range of SQA Units at levels 6, 7 and 8 and thus had day to day experience of teaching and assessing these skills as the SQA Units required (E1: Q.4; E2: Q.4). Thus, for the four bodies scrutinised here (ABRSM, RAD, QCDA and SQA) it can be said that the first two are mainly concerned with examining psychomotor skills and that the latter two include these where this is suitable to the subject area.

The ABRSM, RAD, QCDA and SQA are all involved in the assessment of psychomotor skills in different ways. For the ABRSM and the RAD, this is their main function; the SQA and QCDA include them in their qualifications where this is suitable to the subject area.

Research Aim 2: To explore the criteria that might indicate a clear progression in psychomotor skills from one level of learning to the next.

Physical criteria: accuracy

In Questions 6, the interviewees were asked about what physical criteria, if any, were important.

Interviewer: ..., but things like speed and accuracy, are they some of the things you're looking at?

ABRSM: Yes.

(ABRSM: Q.6)

Yes, definitely agree, accuracy is important to establish in the lower levels.

(QCDA: Q6)

Yes, increases with levels.

(RAD: Q.6)

I'd be looking at, does the student hold the knife properly, do they use the knife in the right manner, do they hold their fingers properly to prevent cutting themselves, because at the end of the day, what you find with some of the younger students are concerned about is the speed, and the safety goes out of the window and you can imagine the results!

(E1: Q6)

Interviewer: So one of the things you're looking for is the accuracy, in fact, of what they've made, exactly to specifications?

E2: Yes.

Interviewer: So, it's about the accuracy of what they've made, that's one of the ones that you'd use?

E2: Yes, *appearance of the finished product.*

(E2: Q.6)

All interviewees agreed that accuracy was a criterion they used, and that this was emphasised particularly at lower levels (QCDA: Q6) when students were mastering the skills. Accuracy could be both of the method used (E1: Q6) and of the finished product (ABRSM: Q.6; E2: Q.6) The RAD (Q.6) thought that accuracy of technique was more important than accuracy in performance of choreography within the RAD system.

Accuracy of both the method and the finished product was considered an important criterion by all bodies, and one which it was important to instil at lower levels.

Physical criteria – correct use of tools and equipment

This criterion was combined with that of correct body/ hand position and movement in the interviews with ABRSM, RAD and QCDA.

E1: The speed isn't important. I would say it's more the process they're going through, so, if I can relate it to knife skills, I'd be looking at, does the student hold the knife properly, do they use the knife in the right manner, do they hold their fingers properly to prevent cutting themselves, because at the end of the day, what you find with some of the younger students are concerned about is the speed, and the safety goes out of the window, and you can imagine the results!

Interviewer: So you are saying that speed is important as a criterion but that it is not so important in the early stages (E1: Yes) as **correct use** and accuracy (E1: Yes). So, you have already identified **correct use** and accuracy as being important (E1: Yes).

(E1: Q.6)

Interviewer: Once again, thinking about students at the beginning of the Unit and at the end of a Unit, correct use of tools and equipment, correct hand/ body position if you were thinking about beginners that would be something you were telling them about all the time?

E2: Yes.

Interviewer: But I presume by the time they become more advanced, you expect that to be ingrained?

E2: Yes, you expect that. If there was a fish to be filleted, you would expect the student automatically to go get the board, put the cloth underneath it so its not going to slip and then appropriately fillet the fish, and then also know what to do with the bones

(E2: Q.6)

Both E1 (Q.6) and E2 (Q.6) thought this was an important criterion, not least in respect of safety issues, but also in respect of knowing, for example, which knife to use for which task to get the correct results. In relation to achieving the correct results, correct use is related to the criterion of accuracy also. For the other interviewees, this criterion was combined with the correct hand/body position or movement, which will be discussed below.

The Expert chefs thought this was an important criterion in relation to safety as well as underpinning more advanced skills.

Physical criteria: reliability

This question was not asked of ABRSM their examiners only see the candidates once and therefore this cannot be a criterion that they are able to judge. However, it was asked of the RAD as their representative was also an experienced teacher.

Yes, consistency is important, particularly at higher levels.

(QCDA: Q.6)

Essential – increases with levels. It's very important for professional dancers.

(RAD: Q.6)

Yes, we're looking that that because in the kitchen, there's very specifics, for example cuts of vegetables, so there's very specific measurements for example, Brunoise and Macedoine, they're both small dice, but there's specific measurement, recognised measurement within the kitchen, not to the extent of walking about with a ruler, but not too big or too small.

(E1: Q.6)

Yes, I would expect that (reliability) to increase, but at the same time, on the menu that we're actually using at Scholars, we're looking for the student to always come up with new ideas each week. Reliability is very important for the consistency of skills - chopping the onions, preparing the vegetables, whatever they're actually doing, that's important for that aspect of it, but we're looking for creativity always.

(E2: Q.6)

Reliability or consistency was thought to be important by the QCDA (Q.6), E1 (Q.6) and E2 (Q.6). Interestingly, the QCDA thought it was more of a factor at higher levels, whereas E2 thought it was important to establish at lower levels.

The RAD thought this was essential especially for the professional dancer (RAD: Q.6). The ABRSM was not asked this question; as they are both examining bodies and see the candidates only once; this was not a criterion they were able to use. However, in professional life as an orchestral musician, for example, reliability would be important as the ability to play in the way the conductor wants, and to repeat that at every performance would be an important part of professional life.

Expert chefs, the QCDA and the RAD all agreed this was important; however, there was some disagreement as to whether it was more important at lower or higher levels.

Physical criteria: speed

Interviewer: ... but things like, speed and accuracy, are they some of the things you're looking at?

ABRSM: Yes.

Interviewer: Do you expect them to get faster?

ABRSM: Absolutely. We do set some recommended minimum tempos, published in These Music Exams, to give teachers and learners kind of steer as to what to expect, but they are only minimum speeds. So, again, it's not all about the speed, it's about the evenness of performance as well, and it can be often that people try to play scales too fast and they're uneven and they sound messy, and if they were playing at a slightly slower tempo there would be more evenness, and on a string instrument, for example, the tone aspects are critical, it's not all about digital dexterity, but it's about other aspects, which, you know, do relate to psychomotor skills, you know, creating a nice sound.

(ABRSM: Q.6)

Yes, increases with levels.

(RAD: Q. 6)

Yes, (speed) could be used.

(QCDA: Q.6)

The speed isn't important. I would say it's more the process they're going through.

Interviewer: So you are saying that **speed** is important as a criterion but that it is not so important in the early stages ?

E1: Yes.

(E1: Q.6)

Interviewer: Would you expect students at the end of the Unit to be able to do things more quickly than students at the beginning?

E2: Yes.

Interviewer: So speed is one of the criteria?

E2: Yes.

(E2: Q.6)

The suggestion of this as a criterion raised some interesting responses. Speed was used as a criterion for parts of the ABRSM examination syllabi (Q.6), such as the scales (set technical exercises). It is expected that the higher up the grades, the faster these will be played. However, this was not seen as important as accuracy, smoothness and tone and speed should not be at the expense of these aspects. Also,

an illusion of speed could be created by the style of playing (ABRSM: Q.6). The RAD thought speed was a criterion and this should increase up the levels. (RAD: Q.6). The QCDA (Q.6) agreed that speed could be used as a criterion. E2 (Q.6) expected students to be able to do tasks more quickly at the higher levels. E1 (Q.6) also agreed that speed was a criterion, but was not so important at lower levels, where it was more important to establish accuracy and correct use. This is very close to the view of the ABRSM (Q.6). So it would seem that speed is something that can be improved once the basic correct techniques and accuracy have been well established.

Speed is used as a criterion for certain parts of the ABRSM syllabi. The QCDA, the RAD and the Expert chefs agreed it was a criterion that could be used. There was agreement that speed was not as important as accuracy or some other aspects which had to be correct at lower levels before speed could be increased.

Physical criteria: correct hand/body position or movement

Interviewer: Things like the correct hand position, is that something the examiner looks at?

ABRSM: No. Unless it's seriously interfering with the musical outcomes, we don't comment specifically on technical aspects of performance, we are purely assessing musical outcomes.

(ABRSM: Q.6)

Absolutely essential and very little margin for error here. Increases with levels.

(RAD: Q.6)

Yes, important, especially in respect of injury prevention a consistent correct position is important.

(QCDA: Q.6)

Interviewer: Correct use of tools and equipment, correct hand/ body position; if you were thinking about beginners that would be something you were telling them about all the time?

E2: *Yes.*

Interviewer: But I presume by the time they become more advanced, you expect that to be ingrained?

E2: *Yes, you expect that.*

(E2: Q.6)

This also raised a variety of responses. The ABRSM (Q.6) did not use this as a criterion in their examinations unless it interfered with the candidate's ability to communicate the music. They also pointed out that in a discipline such as music there were different schools of thought as to the 'correct' position. The QCDA (Q.6), thinking about the question from the point of view of sport and dance, thought this criterion was very important, as students needed to establish and keep returning to the correct position to prevent injury. The RAD thought this was absolutely essential and said there was very little margin for error in this criterion (RAD: Q.6). E2 (Q.6) agreed that this was an important criterion and that he constantly reminded students at lower levels about this; however at higher levels it was expected that this had become ingrained together with the correct use of tools and equipment. Again, there were safety aspects attached to this.

The ABRSM did not use this as a criterion and did not think it should be used unless it interfered with musical communication.

The QCDA, the RAD and the expert chefs thought this was an important criterion especially in respect of safety and injury prevention.

Other criteria: complexity

This question was not asked directly of the ABRSM as it was combined with other criteria:

Interviewer: Thinking about scales now, on the piano syllabus, obviously the scales become longer, different motions, more keys, different variations, harmonic and melodic and all that kind of thing, but do any of the things like, speed and accuracy, are they some of the things you're looking at?

ABRSM: Yes.

(ABRSM: Q.6)

Yes, both more individually difficult steps and increasing longer and more difficult enchainments (combinations of steps). Increases with levels.

(RAD: Q.6)

Agree (that degree of complexity is a criterion), though often a really good performance of a skill can look effortless and this can be deceiving, especially to students at lower levels – it looks easy!

(QCDA: Q.6)

Interviewer: You've already mentioned this to a certain extent, but we talked about, when you said about doing skills individually you'd use a series of skills to build up to something (*E1: Yes*). Presumably, as you progressed through various levels, you would expect the number of steps involved in producing a dish to be greater? (*E1: Yes*). They would be required to be greater? So, would they be more complex dishes at the end of L8 or L9?

E1: Yes.

Interviewer: So, degree of complexity is something you'd look at?

E1: One of the progression routes we look at is we teach what is called the Organisation of Practical Skills; for example, if you look at OPS 2, it could have, for example, 12 process steps, as a student progresses through the courses they would end up, for example, at OPS 4 level, which could have something in the region of 24 processes, and really what we are trying to establish is this kind of idea that the students can multi-skill at the same time - they can be involved in a few processes at the same time.

Interviewer: So, you would expect a student about to exit into the industry to be able to do more things at the same time (*E1: Yes*), all accurately, reliably etc?

E1: Yes.

(E1: Q.6)

Interviewer: So, complexity is also an issue? Presumably, at the beginning of a programme, I'm thinking now of a several year programme, you wouldn't give them a task that had several complex stages?

E2: No.

(E2: Q.6)

Complexity as a criterion is built into the examination syllabi for the ABRSM and the RAD as can be seen by a comparison between what is asked at lower and higher grades in terms of technical exercises, pieces of repertoire and musicianship (please see ABRSM, 2010c for an excellent example in the Piano syllabus from Grade 1 to Grade 8; this is most obviously illustrated in the requirements for Scales and Arpeggios); and RAD (2010a; 2010b; 2010e & 2010f) for examples of their syllabi). The QCDA (Q.6) agreed that complexity was a criterion, but that this could be deceiving, especially to students at lower levels, because when viewing a professional performance that looks effortless they do not realise the complexity and difficulty of it. This might also true of non-subject specialists looking at kitchen skills or musical or dance performances; when the exponents of these skills are experienced the skills can look (and often are meant to look) easy and effortless when in fact they are not. E1 (Q.6) and E2 (Q.6) both agreed that complexity of both the tasks themselves and the number of tasks required would increase from lower to higher levels, and this could be illustrated through the series of SQA Units Organisation of Practical Skills (OPS) where the number of processes increases from the lower to the higher levels.

<p>This criterion is built into ABRSM and RAD assessments and exists in the OPS series of SQA Units. All interviewees agreed this was an important criterion but that it was sometimes hard to judge, especially by students and non-specialists.</p>

Other criteria: degree of autonomy

This question was not asked of the ABRSM as they only see the candidate once at examination. However, as the RAD representative was also a teacher, this question was asked of her.

Yes, definitely (degree of autonomy would be a criterion.)

(QCDA: Q.6)

Not looked for at lower levels but would expect it in Vocational students (but is not tested in assessment – this is from a teacher’s viewpoint).

(RAD: Q.6)

Interviewer: The degree of autonomy – the ability to work on their own?

E1: Yes, it’s something we try and instil very early on, especially in the 1st year Students

(E1: Q.6)

E2: Yes. Last year, when we went through a college review with HMI, they sent a reviewer from England up, and he came down to Scholar’s kitchen when I was working on that particular Wednesday morning, he came down to the kitchen and he couldn’t believe how the students were just working away on their own completely autonomously, just doing the food. And, at the end of that, he could see that the systems that we’re operating here had progressed through, so the students were able to run the restaurant on their own, without me or despite me.

Interviewer: So the degree of independent working is one of the criteria that you’re using?

E2: Yes. Also, when we’re in Scholar’s part of what the learning experience is for the student, they’re doing a supervisory Unit as well, so 5 students will be on assessment on that particular day, managing the corner that they’re on, and there will also be one student managing the overall restaurant menu that day.

Interviewer: So it’s not just their ability to work on their own, it’s also their ability to monitor and supervise other people’s work?

E2: Yes.

(E2: Q.6)

This question was not asked of the ABRSM as they only see the candidate once at examination and are not able to judge this in a candidate. The RAD representative answered this from a teacher’s viewpoint, and thought it would be expected of higher level students studying on a vocational programme. The QCDA (Q.6) thought that this should definitely be one of the criteria used to distinguish between levels. E1 (Q.6) and E2 (Q.6) both emphasised that this is of great importance in their subject area and something which they try to instil in students from an early stage. It is considered essential in the industry. In addition, E2 (Q.6) pointed out that not only were students expected to be able to work on their own, they were also being trained

to supervise other people, either in a small group (such as a Corner) or of the whole kitchen.

The QCDA and the Expert Chefs both thought this was an essential criterion to distinguish between levels; Expert Chefs also took it to a higher level as students learned to supervise others.

Other criteria: affective aspects

For the Expert chef lecturers, the affective aspect upon which they focused was creativity. For the other bodies, however, a wider range of aspects were mentioned.

It is (a criteria used in marking); again, a very difficult area to pin down, because a lot of it is implicit with musical understanding, and there's a lot of knowing about music that cannot be verbalised.

(ABRSM: Q.6)

Yes, especially interpretation and musicality –increases up the levels.

(RAD: Q.6)

Yes, (affective aspects are) increasingly important as you go up through the levels and can be assessed in performance.

(QCDA: Q.6)

And obviously, initially they've got to establish their knowledge of food, but also, later on in the programme, what we're trying to do is enhance their creativity, their creative ability. For example, we'd say, right, today we're going to do a pasta dish, what we would want them to do is come up with a recipe for that pasta dish, because in their 1st year they'll have established their basic skill, for example, doing a macaroni cheese, they would know how to cook pasta properly, they would know how to make a sauce, they would know how to get the sauce to the right consistency, they would know how to finish it. So, from taking a very basic product, we'd expect them to be able to expand on that to do some more complex dish.

(E1: Q.6)

You're also looking for the student to demonstrate flair and imagination to the dish. I might give them, I might say I've got a Supreme of Chicken, I've got some leeks, some mushrooms, what can you create out of it? On our menus, that we give the student, for example, the dessert will be just 'a dessert using fruit', 'a dessert using chocolate'. And, there will always be the weaker student that you're required to give more support, to maybe suggest 2 or 3 things, that'll come to you, and say, let's just say for arguments sake, I want to do an apple and honey tart, and I'll say, well, did you not do that last week, or somebody in the corner did that last week, what other foods have we got through there, what's in season today, so, trying to nurture them on in that way as well.

(E2: Q.6)

Affective criteria can include several different aspects depending on the subject area. The ABRSM (Q.6) focused on the ability to communicate the music and portray the character of the piece and agreed this was an important criterion. The RAD (Q.6) had a very similar view, focusing on interpretation and musicality. The QCDA also thought this should be a criterion and should become more important as a student progresses through the levels (QCDA: Q. 6). Thinking of contemporary dance, the QCDA (Q.6) also thought that improvisation and innovation were affective aspects that could be included. E1 (Q.6) and E2 (Q.6) both focused on creativity as the most important affective aspect they were trying to encourage in their students. However, they thought that this should increase as the students progress up the levels as they would have to establish the basic skills and knowledge before creativity could be judged.

All agreed that this was an important criterion and one which became more important in the higher levels.

Different subjects focused on different affective aspects, but creativity (QCDA: E1 & E2), communication (ABRSM), and interpretation (RAD) were included.

Other criteria: evidence of underpinning cognitive knowledge

Yes, that's very important, and you will notice if you look at the criteria, again, they're in These Music Exams, so when you get to the higher Grades, the criteria change to take that aspect into account. You wouldn't say "authoritative playing" at, say, Grade I, you wouldn't have the nature of style at Grade I, just right notes, right time, fundamentally, you know, where that is just not enough at the higher Grades.

Interviewer: So, you are, to a certain extent, assessing the candidate's knowledge about the music, as evidenced by their playing?

ABRSM: Yes. And sometimes, you know, you have a Grade VIII candidate who might come in and have very little sense of the idea of the music.

Interviewer: So, you could have the technique, but not the idea of the music?

ABRSM: Exactly, and that certainly will affect the assessment.

(ABRSM: Q.6)

More understanding of mood and musicality (see below). Grades 7 & 8 need understanding of different ballet styles e.g. Romantic (e.g. Giselle), Classical (e.g. Swan Lake). Also in the lower Grades, do different character styles e.g. Hungarian, Polish, Russian. This is not really assessed through the RAD system but at vocational college students would do investigative work which would be assessed. Also more work on autonomy here.

(RAD: Q.6)

This (evidence of underpinning cognitive knowledge) would be expected more at the higher levels. It is more obvious in more formal dance styles. Within the levels offered in schools, kids find it frustrating to be asked to write about and review performance.

(QCDA: Q.6)

Interviewer: So the next point I was going to ask you about, the evidence of underpinning knowledge – where they've got to know what they're doing, why they're doing it, got to be able to find it?

E1: Yes.

(E1: Q.6)

E2: For underpinning knowledge purposes, you'd question the students as they were going along – why did you do that? One of the criteria that I've always used over the years I've been here - can I sell that product? Is it an edible product?

Interviewer: And so, you're presuming that if they produce an edible product, to the right specifications, then they must have not only the skills, but also the knowledge of why they're doing it?

E2: Yes.

Interviewer: So, underpinning knowledge is really underpinning - it must be there before they can produce...?

E2: Yes.

(E1: Q.6)

The ABRSM (Q.6) agreed that this was important and was included in their examination criteria. It was especially important in the higher grades where they would expect the candidate's knowledge about the music to be evidenced by their performance. In fact, this was a factor that they also used in grading i.e. to distinguish between one candidate's performance and another's at the same level. In the case of the RAD, this was much less evident. There were some examples where knowledge of the correct period style was important (RAD: Q.6). The QCDA (Q.6) agreed with the importance of this aspect and said they expected this to be more important at the higher levels; it was also thought that this could be seen more clearly in more formal dance styles such as classical ballet or classical Indian dance styles than in contemporary dance. It was also stated that students could find it frustrating when this aspect was assessed separately from performance, particularly by written means. E1 (Q.6) and E2 (Q.6) agreed that this was a criterion but once again could be assessed by judgement of the end product (i.e. the students must know certain things in order to be able to produce the correct result) and also by questioning the students as they were undertaking the tasks.

<p>All agreed that this was important and could be assessed through performance. More evidence of this could be expected at higher levels (ABRSM, RAD & QCDA). Oral questioning (E2) and recording of student commentaries (QCDA) were 2 methods of additional assessment proposed for this criterion.</p>
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Other criteria: reflective practice

This aspect as not discussed with the ABRSM as they only see candidates once at examination and there is no means of assessing this at that point. The RAD representative answered from a teacher's viewpoint.

Learners become more aware of (reflective practice) as they go up to higher levels - it becomes more of a conscious thing as the performance itself becomes less conscious.

(QCDA: Q. 6)

Essential for each dancer to recognise their own limitations and what they need to work on. Safe practice is also important to prevent injury. This increases with the levels and is very important for professional dancers.

(RAD: Q.6)

As the students progress, if we took it from Intermediate 2 up to HND level, again based on the skills levels, L7 and L8 you would expect the students to analyse, you'd be expecting them to evaluate, the dishes they've produced. It's something we've actively... we've built this in over a period of time. The initial hurdle you've got with 1st year students is they don't want to taste anything. But, by the time the student is at HNC /HND level, you would expect them to have developed the ability to taste food, that's a good dish, that's a poor dish.

Interviewer: So they'd evaluate it on things like taste, appearance, but they'd also say things like, you know, I should have cooked this for longer...?

E1: Yes. Obviously, one of the major things is the customer acceptability.

Interviewer: And that's kind of the threshold - if it's not customer acceptable, it's no good?

E1: Yes.

Interviewer: But even if it's customer acceptable, it could still be improved?

E1: Yes. And again, part of the students' external examination for HNC level is that they've got to do kind of a critical analysis (in the HNC Graded Unit); they must do a dish evaluation but they must also do a fairly comprehensive critical analysis.

Interviewer: And that would include the process as well as the product?

E1: Yes.

Interviewer: So they're judging themselves?

E1: Yes, self-analysing.

(E1: Q.6)

A lot of the portfolios that we actually have, the students produce as evidence to the external verifier coming; we actually get them to evaluate the dishes that they've produced. At the end of a practical class, I would bring them all round and we'd talk about the dishes, and I would get them to talk about their own particular dish, so they're reflecting on what they have produced.

Interviewer: So, that's reflecting on the product, what about the process? Do you ever say to them, you could have done that faster...?

E2: That would be part of that same reflection.

(E2: Q.6)

This aspect was not discussed with the ABRSM as they only see candidates once at examination and there is no means of assessing this at that point. The RAD answered this question from a teacher's viewpoint and thought it was important and likely to increase with the maturity of the dancer. The QCDA (Q.6) thought this was an aspect of which learners became more aware as they went up to the higher levels; the performance should become less conscious and the reflection more conscious. E1 (Q.6) and E2 (Q.6) both thought that this was an important criterion and one which they tried to encourage their students to do from early on in their programme. In particular, they tried to move the students on from their own personal tastes in food to the more impartial view of a professional chef judging whether or not he or she has produced a sellable product that the customer will enjoy. Students were encouraged to reflect on both the process and on the end result and this criterion was used in the HNC Graded Unit for professional cookery at SCQF level 7.

This was considered important by the QCDA, the RAD and the Expert Chefs and was to be encouraged.

Other criteria: team working

This criterion was not mentioned in the interviews as it was only identified after analysing the Novice video evidence. However, one of the Experts mentioned one of the aspects of team working:

When we're in Scholar's part of what the learning experience is for the student, they're doing a supervisory Unit as well, so 5 students will be on assessment on that particular day, managing the corner that they're on, and there will also be 1 student managing the overall restaurant menu that day.

Interviewer: So it's not just their ability to work on their own, it's also their ability to monitor and supervise other people's work?

E2: Yes.

(E2: Q.6)

No question was asked about this criterion in the interviews as it was only identified after analysing the Novice video evidence. However, E2 (Q.6) mentioned one of the aspects of team working when describing the student experience in the production kitchen for the training restaurant. Here the students had to work in a Corner with other students, one of them would be supervising that corner and there would also be a student working as Head Chef supervising the whole kitchen. It is worth reflecting that as an orchestral player (say in a violin section of 12) or as a member of the corps de ballet (which in a large traditional company could have 32 female members alone) the ability to work together, to all do the same thing at the same time, is essential.

This was mentioned voluntarily by E2 as being an important aspect of kitchen practice.
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Research Aim 3: To explore ways in which such criteria might be made explicit through being described in learning outcomes: or, if not, of being codified by some other means

Can be expressed in words to a certain extent, but there are limits to this. QCDA is currently undertaking a project of exemplification of levels 3-8 in PE which are almost exclusively video files – at the moment assessors have the level in their heads, but this should lead to more standardisation of levels. The same is being undertaken for music. This is more difficult at the higher levels where more innovation, improvisation or interpretation might be expected, though all performances should be ‘correct’.

Beyond Level 1, need a subject expert to allocate; if they don’t have one in house, e.g. visual arts, then they contract out. No cross-subject criteria have been developed, all allocation to levels is done within the subject area at the moment.

(QCDA: Q.5 & Q.7)

Parity of qualifications is an issue now and likely to become more of one. After this conversation, I am considering requesting some kind of cross-subject moderation, maybe of a small group of related subjects at first, as at the moment levelling is done almost entirely within subject specialisms and therefore parity is open to examination. There is a tendency towards a 'silo mentality' when describing how the subjects did not to relate to each other.

(QCDA: Q.8)

I hope it's not a problem (allocating these to levels), because we're trying to do this in terms of getting qualifications accredited and so on, we are accredited, of course, on the NQF. In the early days, (we had) quite deep and detailed (discussions), because of Tony Knight working at QCA, he was a musician himself, which of course makes the difference, because what we're dealing with here is a community of practice, effectively, where you've got 650 examiners who work for the ABRSM, examining in 96 countries throughout the world, but it is a difficult thing to point and I think the best way to do it is just to give exemplars, really. For example, when we were looking at allocating UCAS points to the Grades and we made a comparison there between expectations among different Awarding Bodies, but also between GCSE and A level, and the Grades.

There was a mapping exercise undertaken by the Expert group, because you can't just pluck a number out of thin air, saying that so many UCAS points is a Grade VII Distinction, or something, there has to be some rationale, there has to be some thinking about how that relates to a music qualification in a different area. We have Unit descriptions, and this sort of thing, which are fairly generic, and they have to be by their nature, but I would think even, probably, the cognitive folk, kind of, they have to be pretty generic when they're talking about the levels themselves. So, as you say, they're talking maybe at the lower levels about describing something and at the higher levels about analysing it and so on, I don't think there's much difference really. If you look at our Diplomas, for example, there at the NQF levels of 4, 6 & 7 I think, so they're Higher Education basically, they have mapped quite easily into the generic HE levels, and with the Diplomas, you're dealing with some written work as well as some performance work, so...

(ABRSM: Q.7)

Well, we have some selectors, who work over quite an extended period of time. Normally there are 2 or 3 of them, you know, it depends which syllabus, but usually, at least one of the selectors is an examiner, so they make recommendations at each Grade, and then the lists go through a moderation process and we look at things like the balance and in terms of the musical quality and the technical things, as you're saying, so if we're talking about Grade I, if we're talking about Piano, which seems the easiest one to talk about I suppose in many ways, then we'll have some pieces that will not go out of 5 finger position because we need to accommodate candidates with small hands. We wouldn't necessarily rule out a piece which had to use pedal, because we might have an adult student and we have to recognise that candidates can be from 4 to 104, potentially...

(ABRSM: Q.6)

ABRSM: Yes, the technique is the minimum stage really; it's what you build on top of that, so when you choose a piece of repertoire, you can say, well, it can't be any lower than Grade IV, because you need at least Grade IV piano skills to be able to play this piece, but it might require a much more musical maturity to actually play it successfully. That can sometimes be a problem for us in repertoire selection, when we're saying, yes, it's all very well, the notes are easy, but to play this well you actually have to be quite an advanced musician, is the musicianship appropriate to the level.

(ABRSM: Q.8)

In the RAD system, it is the technical exercises that differentiate the levels, and the syllabus lays this out.

(RAD: Q.7)

Well, you would be able to describe it, you could do it in words, for example, it's one that I use quite often, is say you took soups as dishes, and if you looked at a first year soup would be for example lentil soup, which is a fairly basic soup, 2nd year a level of soup might be a soup that contains a specific cut of vegetables, for example, minestrone. Once you progress into a 3rd year level of soup, you might be looking at things like a consommé, or a bisque, or something like that, so you can actually see, within the dishes, you can actually identify the complexity. I would say in the majority of cases it should be enough to actually specify the dishes.

Interviewer: So they could arrive at the end product that's described in the level, but that product might not be as good because the processes or whatever have not been correctly followed?

E1: Yes.

Interviewer: So, to a certain extent, the only way you could describe that would be to what? Video it?

E1: You could video, but, I mean, it would be a lengthy process to do that.

(E1: Q.7)

E2: The easiest would be a video, because you would see a student not very confident at chopping, shredding etc, whereas you would see the competent student being able to effectively produce the goods. It's a simple thing like frying an egg – its one of the most difficult things a chef can do, to produce a perfectly fried egg.

Interviewer: So are you telling me that you feel words, to a certain extent, are inadequate for describing the differentiation between different levels of practical skills?

E2: Words are required, but they're not enough. I could say, for example, that I wanted a poached Supreme of Chicken at a basic level, but if I wanted a poached Supreme of Chicken at an HNC level, then I would expect it to be properly prepared, stuffed if need be, and presented in a much, much finer way.

Interviewer: So there are words you could use, it would be more accurately prepared; there would be more creativity ...?

E2: Yes.

Interviewer: So there are words attached to differentiating?

E2: Yes. You could also name dishes. For example, if I want a mousseline of something, then I know exactly what that means, because of the skills that I have, but I would expect the students to be able to produce a mousseline at the higher level.

Interviewer: So the dishes they are asked to prepare would, in fact, be appropriate to a level. Based on your experience, you know what dish would be appropriate for a particular level, and that's what you expect them to produce?

E2: Yes.

Interviewer: So if you were doing set menus for beginners, that would have a different set of dishes in it?

E2: Yes.

(E2: Q.7)

The difficulty of describing the correct level of practical psychomotor skill was acknowledged by all; however, different approaches to resolving this issue were suggested. The QCDA, E1 and E2 all suggested that words could be used, but were not enough in themselves (QCDA: Q.7; E1: Q. 7; E3: Q.7). The ABRSM actually gave examples of the wording of the criteria used to assess different grades (ABRSM: Q.6), though interestingly these referred more to affective than technical aspects.

Video exemplification was suggested by the QCDA, E1 and E2 (QCDA: Q.7; E1: Q.7; E2: Q.7). The RAD offer DVDs of the syllabus work for both Graded and Vocational Examinations (RAD, 2010b) as well as CDs of the Examination Music (RAD, 2010a) as well publishing the syllabi in Benesh notation. The ABRSM offer

both downloads of the Examination pieces (ABRSM, 2010a) as well as CDs to purchase (ABRSM, 2010b). They also publish the most popular pieces of music themselves. So in these subject areas, words are already augmented or in fact superseded by video and audio exemplification as well as through specialised notation.

The ABRSM (Q.8), E1 (Q.7) and E2 (Q. 7) all suggested that criteria could be exemplified by repertoire of pieces of music or dishes, and that these pieces or dishes could in themselves indicate a level. At present, this is the way the ABRSM operates, with a group of selectors who choose the pieces at each Grade, followed by a moderation process (ABRSM: Q.6). The choices are based not on set criteria, but on the experiences of the selectors and examiners and on historical precedent. This works very successfully within the subject area, but it is then difficult for someone from a different subject area to understand and to relate these levels to other subjects at the same level. The RAD uses the technical exercise to exemplify the standard at each level (RAD: Q.8). The QCDA admitted that this was an issue and that the allocation of these kinds of qualifications to levels was done by subject experts (QCDA: Q.4) with little or no cross-subject moderation; a “silo mentality” was the exact phrase used (QCDA: Q.8). Where there was no subject expert in house, the allocation to levels was contracted out (QCDA: Q.5). This method overcomes the ‘language barrier’ of different subjects understanding each other, as experts within a subject will understand the nuances of difference between levels, but does little for parity of qualifications across subjects (QCDA: Q.8).

Words can be used but are not sufficient, particularly when trying to describe the more technical rather than the affective aspects.

Exemplification by video or audio is already used by the ABRSM, the RAD and BTEC (QCDA) and the Expert chefs suggested this as an aid also.

The distinguishing of levels through the naming of repertoire (of musical pieces, technical exercises or dishes) is another strategy that could be used.

Research Aim 4: To consider the implications of the above for the teaching and assessment of psychomotor skills in vocational education

Once again, the ABRSM was not asked about teaching and learning as that is not their primary function, although they offer teaching qualifications separately. The RAD representative answered from a teacher's viewpoint. However, they do, of course, both assess these skills.

Teaching and learning approaches

Re teaching, the approach would be show the whole, take apart and teach the parts, then put back together. In higher levels, the students might be asked to take the work apart themselves and re-assemble it. If looking for improvisation and innovation (e.g. in contemporary dance), might ask students to put it back together in a different way.

(QCDA: Q.8)

Important to foster enjoyment and energy. Break down exercises into steps or groups of steps. Demonstrate them. Students copy, teacher gives corrections, demonstrates again if necessary, gradually build it up to the whole. Some students can do the steps but find it difficult to remember the enchainements.

(RAD: Q.8)

But now, for example, the new Pre-Primary and Pre-Primary Syllabus in Dance is based on research into child development, how children are becoming less mobile and flexible, and also into the type of dancers that the current system is producing at the top levels. There are concerns that British dancers don't have the flexibility and range of movement required. This new syllabus has been very successful and they are now implementing a similar approach to Grades I-III. Also, at the same time, the Vocational Syllabi are being worked on to improve them along the same lines - currently working on Intermediate Foundation and Intermediate, to incorporate a larger vocabulary of dance steps and movements rather than just technical exercises. The buzz word is 'feeling before form' (gave e.g. of assemble).

(RAD: Q.4)

Years ago, what we tried to do was try to concentrate just on the basic skills individually, but it didn't really make it a meaningful experience, for example, just to have a student slicing onions for a lesson, you didn't end up with any end product at all. So the students couldn't really relate to why they were doing that and what the outcome was going to be. So what we did was, we identified fairly simplistic dishes that would incorporate the basic skill the student was covering at that time, for example, a broth-type soup, which was a very simplistic dish, but it encompassed the basic skills. It then brought in the likes of cooking processes, simmering the soup, things like that.

(E1: Q.8)

I couldn't really give one example, but initially, my style of teaching is, I get the students to assess their own dishes, even if it was at 1st year level. I would get them to firstly, assess their own dish, the product, first. They would then assess their fellow students' products, so really what you're doing there is instilling this idea of assessing the food. And what I would expect to see developing, is initially the students would say, "aye, that tastes good", or "no, I don't like that". And really what we're trying to do is build that up, say "you didn't like it – why didn't you like it?" "It didn't taste good". "Why didn't it taste good?" "It didn't taste good because it was tasteless, it wasn't seasoned, it was lumpy, whatever..." so these are the things we're trying to develop. The other aspect that I get them to do in the restaurant situation is look at customer feedback.

E1: And also, the members of staff as well, so we try and develop this idea that we're looking for a uniform product, and get other members of staff to come in and assess the dishes as well.

Interviewer: So you'd assess each others? In an informal way?

E1: Yes. Sharing of best practice.

Interviewer: Does that work?

E1: Yes. Initially, it doesn't, because the doors are always closed, people don't like identifying best practice with colleagues, but it's fairly relaxed in here now compared with what it used to be, so identification of best practice works.

(E1: Q. 8)

In a normal classroom situation here, I would demonstrate what I want them to produce to a level, and then send the class off to do, to get to that level, and then bring them back to do the next stage, and the next stage, whereas at L7, I'm expecting them to be able to do that stage from start to finish.

Interviewer: So, when you give them a task, you expect them to already know, and to be able to perform, all the steps in that task?

E2: Yes.

Interviewer: Whereas, at the beginning, you've had to break it down?

E2: Yes.

(E2: Q.8)

These responses raised some interesting issues. The QCDA (Q.8), the RAD (Q.8), E1 (Q.8) and E2 (Q.8) confirm the same method of teaching a practical psychomotor skill, particularly at the lower levels, which is to break in down into small tasks and put it back together again. At higher levels, awareness of the component parts still appears to be important, but here students would be expected to know how they fit together and in the correct sequence (E2: Q.8) and, if necessary, break down the tasks themselves (QCDA: Q.8). In addition E1 (Q.8) points out the importance of students knowing what the finished result should be, so that even if the tasks are broken down into small steps, the students can still envisage the finished product to which they are contributing (E1: Q.8).

E1 also emphasises the importance of combining the learning of the skills with reflective practice and underpinning cognitive knowledge (E1: Q.8) and the importance of sharing good practice amongst lecturers. This latter is seen as contributing to a standard, reliable product which can then be produced in the restaurant by different classes and sold to the customer.

Practical psychomotor skills can be taught by being broken down into small tasks which are gradually built up and put together (QCDA; RAD: E1; E2).
This works better if the students know what the end product is going to be (E1).
These skills should be taught alongside the relevant underpinning cognitive knowledge and affective aspects (E1).

Assessment

You will notice if you look at the criteria, again, they're in These Music Exams, so when you get to the higher Grades, the criteria change to take that aspect into account. You wouldn't say "authoritative playing" at, say, Grade I, you wouldn't have the nature of style at Grade I, just right notes, right time, fundamentally, you know, where that is just not enough at the higher Grades.

Interviewer: So, you are, to a certain extent, assessing the candidate's knowledge about the music, as evidenced by their playing?

ABRSM: Yes. And sometimes, you know, you have a Grade VIII candidate who might come in and have very little sense of the idea of the music.

Interviewer: So, you could have the technique, but not the idea of the music?

ABRSM: Exactly, and that certainly will affect the assessment.

(ABRSM: Q.6)

All RAD assessment is by practical performance. Even the highest levels (Advanced 2, Solo Seal) are by this method – there is no written work or oral questioning.

(RAD: Q.8)

More emphasis should be placed on practical performance for assessment, maybe with student's commentary on video or audio – much easier these days. Students can use this to comment on their own work, on the work of other students and on professional level performances they have seen. They find it easier to articulate their thoughts by this method than by writing. Some qualifications (BTEC was mentioned) are starting to reflect this approach.

(QCDA: Q.8)

Interviewer: Just to make sure I understand this, by judging the product, to a certain extent you can look at the product and judge the process, then?

E1: Yes.

Interviewer: So if you're looking at a soup, and it's got Macedoine in it, and it's too big, you can say...?

E1: Yes.

Interviewer: So, perhaps not entirely, but to a certain extent, you can judge process by product?

E1: Yes.

Interviewer: So, presumably, the more complex things get, the more possible that's going to be, because you couldn't arrive at the right result without doing things right?

E1: That's right.

(E1: Q. 8)

Interestingly, the ABRSM, RAD, QCDA and E1 all seemed to agree that, not only was practical performance the preferred method of assessing practical skills, but that also many other aspects, including underpinning cognitive knowledge (E1: Q.8) and affective aspects (ABRSM: Q.6: RAD: Q.6)) could also be assessed through this medium. The QCDA (Q.8) adds the idea of students talking about their work, which can then be recorded, as an additional assessment of any elements which cannot be judged through performance, and that many candidates are much more articulate when speaking than writing; some awarding bodies in England appear to be trying this approach.

Both the ABRSM (Q.6) and E1 (Q.8) talk about the ability to assess the process or technique through the means of the finished product or outcome, saying that the final results, particularly at higher levels, cannot be correct if the correct processes and techniques have not been followed.

These skills are best assessed by performance, in which not only the skills itself but other aspects such as underpinning knowledge and affective aspects can also be judged.

If additional assessment is required, oral questioning or recorded students commentary is often more suitable than written assessment.

Chapter 8: Cross-Case Analysis.

Introduction

In this chapter, the three sets of data will be brought together and analysed in a cross-case synthesis (Yin, 2009 p.136). This will mainly take a pattern-matching approach as recommended by Stake (1995 p.44) and Creswell (2009 p.66) in order to formulate possible relationships within the data.

Research Aim 1: To investigate the place of psychomotor skills within vocational education curricula and how these are viewed by different bodies.

The prime source of information for this outcome was the analysis of quality documents. The word 'skills' is used in many different ways and different contexts; it is presumed that the reader is a subject specialist and understands what is meant from the context (Table 3: Chapter 5). However, this could cause confusion when used in level descriptors to compare across subjects. Psychomotor skills are included when the relevant SQA units are analysed (Table 1: Chapter 1) and these are the main focus of the examination syllabi offered by the ABRSM (ABRSM 2010b; 2010c; 2010e) and the RAD (RAD 2010a; 2010b; 2010e; 2010f). The QCDA includes qualifications based on psychomotor skills assessments on the National Qualifications Framework (NQF): however, as these were undertaken by subject specialists the need to specify skills more closely was circumvented (QCDA: Q.4). However, better definitions of various types of skills across subjects would assist in any comparison across subjects at the same level.

Research Aim 2: To explore the criteria that might indicate a clear progression in psychomotor skills from one level of learning to the next

A wide variety of data was collected in this area. The quality documents were the least productive in this area as they tended to focus on the Programme Intended

Learning Outcomes (ILOs) which were not detailed enough to identify specific criteria (R: Nursing, University of Northumbria, 2006; R: Nursing, University of East Anglia, 2006; R: Nursing, University of Sheffield, 2006). However, they provided some evidence for one of the physical criteria (R: Art & Design Hertford College 2005; SBS: Art & Design 2008; SBS: Dentistry 2002). The important evidence gathered from the documentary analysis was that different levels of skills existed and were sometimes differentiated by name (R: Nursing, University of East Anglia, 2006).

In particular, the final level of formal education appeared to be capable of being defined both academically (R: Nursing, Brunel University, 2006; R: Nursing, University of Sheffield, 2006); and in terms of skills and competence (R: Nursing, Brunel University, 2006; R: Nursing, Coventry University, 2006; R: Nursing, DeMontfort University, 2006; R: Nursing, University of Central England, 2006; R: Nursing, University of East Anglia, 2006; R: Nursing, University of Sheffield, 2006; SBS: Dentistry, 2002); this final level is seen as that at which a graduate can exit to safe, competent, unsupervised practice in their profession. (R: Nursing, University of Central England, 2006). Additionally, the documents imply further levels beyond formal education, as the graduate is expected to be prepared for lifelong learning (R: Nursing, Brunel University, 2006) through reflective practice (R: Nursing, City University, 2006; R: Nursing, University of Central England, 2006; SBS: Dentistry, 2002).

When analysing the data for those criteria identified through the literature review as being possibly used to differentiate psychomotor skills between levels, much useful evidence was collected which can be summarised as follows:

Criteria	Documents	Expert Video	Novice Video	Interviews	SQA Units
Accuracy	No	Yes	Yes	Yes	No
Correct use of tools etc	Yes	Yes	Yes	Yes	Yes
Reliability	No	Yes	Some	Yes	No
Speed	No	Some	Some	Yes	No
Correct hand or body position	No	Yes	Yes	Yes	No
Complexity	No	Yes	Yes	Yes	Yes
Autonomy	Yes	No	Yes	Some	Yes
Affective aspects	Yes	No	Yes	Yes	No
Team working	Yes	No	Yes	Some	Yes
Cognitive knowledge	Yes	No	Yes	Yes	Yes
Reflective practice	Yes	No	Yes	Yes	Yes

Table 9. *Summary of criteria found in the primary research.*

This is a summary of the Database of Evidence which can be found at Appendix IX. As well as confirming the identified criteria, some evidence was gathered as to whether the importance of these criteria increased as students progressed up the levels (ABRSM: Q.6; RAD: Q.6; 1:Q.6; E2: Q.6; QCDA: Q.6).

Physical criteria: accuracy

From the video data, accuracy increased over the three levels being analysed (NW1D1: 10.47-11.46; NW11D2: 04.30-04.54; E1: 1.07; E2: 0.47 – 5.05). Accuracy of method (E1: Q.6) and of the finished product or performance was considered an important criterion by all the bodies interviewed, (ABRSM: Q.6; RAD: Q.6; E1: Q.6; E2: Q.6; QCDA: Q.6) and one which it was important to instil at lower levels as a basis for future skills development. (QCDA: Q.6; RAD: Q.6).

Physical criteria – correct use of tools and equipment

This was the only physical criterion mentioned in the quality documents (R: Art & Design Hertford College 2005; SBS: Art & Design 2008; SBS: Dentistry 2002); it was also evidenced through the video data (NW1D1: 0.05; NW1D1:04.34 – 08.37; NW1D1: 44.00; NW1D1: 50.28; NW1D2: 00.51; NW1D2: 19.10) and in the interviews with the Expert chefs (E1: Q.6; E2: Q.6) as being important to safety as well as underpinning more advanced skills. The correct use of an ever wider range of tools, equipment and materials should increase as the levels increase: this could be seen in the video evidence (NW1D1: 50.28; NW1D2: 00.51).

Physical criteria: reliability

This produced some interesting results. Both the Expert chefs (E1:Q.6: E2: Q.6), the RAD (RAD: Q.6) and the QCDA (QCDA: Q.6) identified this criterion as being important in the interviews: however, the QCDA and the RAD thought it should be seen more at higher levels whereas the Expert chefs thought it was important to establish at lower levels. This may reflect the demands of the different subject areas. In the video evidence, this was not fully conclusive as it was difficult to find instances of exactly the same task been undertaken several times; however, there was some evidence in the Expert videos as the Expert produced, for examples, cuts of different vegetables that were exactly the same size and shape (E2: 1.14 – 2.34; E2: 3.51-5.05). There was some less conclusive evidence in the Novice videos; perhaps reliability was likely to be less evident at this stage but there did seem to be recognition that this factor was desirable (NW1D2: 09.25).

Physical criteria: speed

Speed is used as a criterion for certain parts of the ABRSM syllabi; for example, scales and arpeggios have minimum recommended speeds which get faster as one moves up the levels (ABRSM: Q.6; ABRSM, 2010c; ABRSM 2010e). They also commented that, in musical terms, the illusion of speed can be conveyed to the

listener by the style of playing (ABRSM: Q.6). The QCDA, the RAD and the Expert chefs agreed speed was a criterion that could be used QCDA: Q.6; RAD: Q.6; E1: Q.6; E2: Q.6). However, there was agreement from the interviewees that speed was not as important as accuracy, or indeed some other aspects, at the lower levels and that these aspects should be correct before speed could be increased (E1: Q.6; ABRSM: Q.6; RAD: Q.6). In the video evidence, the Expert chef could be heard telling the Novices in Week 1 to get it right rather than do it quickly (NW1D1: 35.35); this would also have safety implications. There was some evidence in the Novice and Expert videos that speed does increase with practice and experience (Table 7: Chapter 6).

Physical criteria: correct hand/body position or movement

This new criterion was developed through the analysis of the video data. (NW1D1: 35.35; NW1D1: 37.38; NW1D1: 52.24- 56.18; NW1D1: 21.25-25.12). The correct hand position and movement has to be learned and practiced in addition to the correct use of tools and equipment. This criterion also increased over the three levels being analysed (NW1D1: 35.35; NW1D1: 37.38; NW1D1: 52.24- 56.18; NW11D1: 35.58; NW11D1: 47.15; NW11D2: 4.30-4.54; E1: 5.45; E2: 8.04). The QCDA and the RAD (QCDA: Q.6; RAD: Q.6) agreed with the Expert chefs (E2: Q.6) that this was an important criterion especially in respect of safety and injury prevention. However, the ABRSM did not use this as a criterion and did not think it should be used unless it interfered with musical communication (ABRSM: Q.6). This is partly a reflection of their status as an examining body; they see the candidates only once at examination, and this is not enough to comment meaningfully on this criterion. In addition, as music performance is an art form, there were different schools of thought about this and it would be difficult to nominate one position as being correct (ABRSM: Q.6). The RAD, perhaps not surprisingly, considered this criterion absolutely essential and thought it increased with importance through the levels (RAD: Q.6).

Other criteria: complexity

The complexity both of individual tasks (seen in the Expert videos) and the number of tasks being undertaken at the same time (between Week 1 and Week 11 of the Novice videos) increased over the three levels being analysed in the video data (NW11D1: 23.26; NW11D1: 42.15; NW11D2: 01.38; NW11D2: 09.23; NW11D2: 30.02-33.34; E1: 05.45-07.19; E2: 03.51-05.05; E2: 08.04-08.26; Table 8: Chapter 6). It is also built into ABRSM and RAD assessments (ABRSM, 2010c; ABRSM 2010e; RAD, 2010a; RAD, 2010b; RAD, 2010e; RAD, 2010f)) and exists in the OPS series of SQA Units (Appendix XII); some of which the Novices in the videos were undertaking (NW11D1: 02.36). Other interviewees agreed this was an important criterion but that it was sometimes hard to judge, especially by students and non-specialists (QCDA: Q.6; E1: Q.6; E2: Q.6). It was pointed out that a really professional performance, whether or music, dance, sport or cooking, could appear effortless and this could be deceiving to those watching without specialist subject knowledge who might not be able to gauge the difficulty of the task being performed QCDA (Q.6).

Other criteria: degree of autonomy

An increase in the degree of autonomy shown by the Novices from Week 1 to Week 11 could be clearly seen in the video data. At the beginning they had to be told exactly what to do by the Expert, have it demonstrated to them, sometimes more than once, before going away to practice it themselves (NW1D1: 0.05-08.37; NW1D1: 22.05-3.29; NW1D1: 24.45; NW1D1: 25.12-25.25; NW1D1: 26.28-28.19; NW1D1: 33.10-34.02; NW1D1: 42.00-43.15; NW1D1: 52.24). By Week 11, however, they were working with a minimum of supervision, asking questions when necessary and looking up information for themselves (NW11D1: 15.01; NW11D1: 17.16; NW11D1: 19.56). In addition, the QCDA (QCDA: Q.6) and the Expert chefs (E1: Q.6; E2: Q.6) both thought this was an essential criterion to distinguish between levels; Expert chefs also took it to a higher level as students learned to supervise others (E2: Q.6). This question was not asked of the ABRSM as it was not possible

to identify this in their examination situations. The RAD representative, speaking as a teacher, thought that this was a criterion that full-time vocational students were expected to develop; it was not assessed through the RAD system however (RAD: Q.6).

Other criteria: affective aspects

All interviewees agreed that this was an important criterion and one which became more important in the higher levels (ABRSM: Q.6; RAD: Q.6; QCDA: Q.6; E1: Q.6; E2: Q.6). Once again, like speed, this was seen as something which could come later, after the basic techniques had been established (E1: Q.6; E2: Q.6; QCDA: Q.6). Different subjects focused on different affective aspects, but creativity (QCDA: Q.6; E1: Q.6; E2: Q.6), communication (ABRSM: Q.6) and interpretation and musicality (RAD: Q.6) were included. Some creativity could be seen in Week 11 of the Novice videos (NW11D2: 18.25; NW11D2: 19.10; NW11D2: 20.19). It was agreed that such aspects as innovation and creativity would be more important to some subjects than others; contemporary dance, for example, might look for these criteria whereas classical ballet and classical music would look for different affective aspects such as interpretation (QCDA: Q.6; RAD: Q.6).

Other criteria: evidence of underpinning cognitive knowledge

All interviewees agreed that not only was this important but that it was capable of being assessed through performance (ABRSM: Q.6; QCDA: Q.6; E1: Q.6; E2: Q.6). It was expected by the ABRSM (ABRSM: Q.6) and the QCDA (QCDA: Q.6) that more evidence of this could be expected at higher levels; the performance could not be at the required level if the performer did not understand the style of the music or dance, or was aware of the performance practice from the era, for example. The RAD thought this was of lesser importance, particularly at lower levels; however, at higher levels, students would be expected to understand about the style of the piece (i.e. the difference stylistically between a Classical ballet, such as Swan Lake, and a Romantic ballet, such as Giselle) and that this should be evident in the performance.

Interestingly, whilst teaching the Novice class, the Expert continually included elements of underpinning knowledge, relating this to the tasks been undertaken by the novices at the time (NW1D1: 5.29; NW1D1: 25.12-25.25; NW1D1: 52.24; NW1D2: 02.30; NW1D2: 07.50; NW1D1: 1.01). So, for example, whilst demonstrating Paysanne of celery, he explained how celery was grown, and in what dishes the Paysanne cut of vegetables could be used. It would seem that for teaching, learning and assessment, the evidence collected here points towards an integration of cognitive underpinning knowledge with the practical psychomotor skills to which it is related.

Other criteria: reflective practice

This was mentioned frequently in the quality documents as being something to be encouraged and which would assist the students in becoming lifelong learners, even after the end of their formal education (R: Nursing, City University, 2006; R: Nursing, University of Central England, 2006; SBS: Dentistry, 2002). This was echoed by the QCDA (QCDA: Q.6) and the Expert Chefs (E1: Q.6; E2: Q.6) in the interviews. In the video evidence, the Expert encouraged this through the structure of the class; the Novices were showing some evidence of this by Week 11 (NW11D2: 38.17-38.29). E1 (Q. 6) in particular explained that he was trying to move the Novices away from their personal tastes into thinking like a professional chef and making a judgement as to the saleability of the dish and its acceptability to the customer; reflecting on the product as well as the process (E1: Q.6). Once again, this criterion was not mentioned to the ABRSM as it could not be judged in their examination structure. The RAD, although not assessing this criterion in their examination system, nevertheless thought it was essential for a dancer to develop this to prevent injury and understand their own strengths and weaknesses (RAD: Q.6).

Other criteria: team working

Team working was mentioned frequently as a 'skill' in the quality documents and as something to be encouraged (Table 3: Chapter 5). It was added to the analysis when reviewing the video data. The Novices in Week 11 showed evidence of team

working (NW11D1: 27.16; NW11D1: 32.00; NW11D1: 20.39; NW11D2: 34.05) which was not observed in Week 1. It was also mentioned voluntarily by E2 as being an important aspect of kitchen practice (E2: Q.6). This criterion was not asked about in the interviews as it was only identified at a later stage.

Research Aim 3: To explore ways in which such criteria might be made explicit through being described in learning outcomes: or, if not, of being codified by some other means

Wording of learning outcomes

There was evidence in the quality documents evidence that learning outcomes should relate to skills practice and competence (R: Art & Design, Oxford & Cherwell College, 2006; R: Hospitality, Leisure, Sport & Tourism, Bell College, 2006; R: Music, Art & Design, Barking College, 2005) as well as more academic outcomes (R: Art & Design, Oxford & Cherwell College, 2006; R: Music, Art & Design, Barking College, 2005); however, there was insufficient detail to assist in the wording of these. This was also the case in the SQA Unit which was being used in the Novice classes that were videoed: rather it relied on the Performance Criteria and Range Statements, and the level was indicated only through the complexity and number of tasks being undertaken (Appendix XII). This is more understandable when the views of the interviewers are taken into account; the consensus here is that words can be used to describe levels of psychomotor skill but are not sufficient on their own, particularly when trying to describe the more technical rather than the affective aspects (ABRSM: Q.6; QCDA: Q.7; E1: Q. 7; E3: Q.7). Exemplification of levels could be better provided, it was suggested, on video (QCDA: Q.7; E1: Q.7; E2: Q.7). Both the Expert chefs said this would be a useful aid) E1: Q.7; E2: Q.7), and exemplification by video or audio is already used by the ABRSM (ABRSM, 2010b), the RAD (RAD, 2010b) and BTEC (QCDA: Q.7).

Another strategy which could be considered is the distinguishing of levels through the naming of repertoire (of musical pieces or dishes). This is a method already

adopted by the ABRSM (ABRSM: Q.8) and by the Expert chefs (E1: Q.7; E2: Q.7) and to a certain extent by the RAD who differentiate the levels of their examinations through the technical exercises set at each level (RAD: Q.7).

Research Aim 4: To consider the implications of the above for the teaching and assessment of psychomotor skills in vocational education

Teaching & Learning Approaches

In the quality documents, a wide variety of teaching and learning approaches appear to be in use, some of which are specifically designed to aid the teaching and practice of practical psychomotor skills, such as studio practice, workshops, practical classes, performing industrial placements, action learning, skills laboratories and virtual wards (Table 5: Chapter 5). Some of these approaches are obviously suitable only to certain subjects. The video data concentrated on only one of these; the practical class. Within this Novice class, a clear difference in approach could be seen from Week 1 to Week 11, as shown:

Week 1	Week 11
Individual steps	Holistic approach to tasks
Simple tasks	Complex tasks
Individual tasks	Many tasks simultaneously
Constant Expert demonstrations and explanations	Self-reliance
Constant instructions from the Expert	Novices looking up information themselves in books and reference sheets

(Table 8: Chapter 6. *Differences in teaching and learning approaches between Week 1 and Week 11 of the Novice videos.*)

In the interviews, both the Expert chefs (E1: Q.8; E2: Q.8) the RAD (Q.8) and the QCDA (QCDA: Q.8) agreed that practical psychomotor skills can be taught by being broken down into small tasks which are gradually built up and put together: this was viewed as being more successful if the students know what the end product is going to be (E1: Q.8). The RAD mentioned the difficulty some students had in remembering long chains of steps, even though they could perform the steps individually (RAD: Q.8). In addition, it was suggested that these skills should be taught alongside the relevant underpinning cognitive knowledge and affective aspects and not in isolation (E1: Q.8).

The RAD (Q.8) also mentioned the widespread review of their syllabus currently being undertaken to emphasise more the enjoyment of movement particularly at the lowest levels, and consequently less emphasis on technique at this stage. These changes reflect research into child development and are ongoing.

Theory-practice linkages

This was identified as a clear strand in the quality documents (R: Nursing, University of Birmingham, 2006; R: Nursing, Nottingham University, 2006; R: Music, Art & Design, Barking College, 2005) but was integrated with teaching, learning and assessment in the interviews. In the documents, the linking of theory with practice appears to be thought desirable by reviewers (R: Nursing, University of Birmingham, 2006; R: Nursing, Nottingham University, 2006; R: Music, Art & Design, Barking College, 2005) external examiners (R: Nursing, Brunel University, 2006) and students (R: Nursing, Northumbria University, 2006) and that these linkages should appear in both assessment and teaching and learning approaches. This view was confirmed by the interviewees when asked about cognitive underpinning knowledge as a criterion (ABRSM: Q.6; QCDA: Q.6; E1: Q.6; E2: Q.6). The evidence seems to indicate that an integration of cognitive underpinning knowledge with the practical skills to which it is related is desirable as this links theory with practice (E1: Q.8).

Assessment

The analysis of quality documents identified that final assessment is what proves 'competence', 'fitness to practice and that professional standards have been achieved (IR: Royal Scottish Academy of Music and Drama, 2004; R: Dance, Drama & Performing Arts, Music, Liverpool College 2004; R: Nursing, Coventry University, 2006; SBS: Dance, Drama & Performing Arts, 2007); and this standard can be ensured by the involvement of external examiners in a final practical assessment (IR: Royal Scottish Academy of Music and Drama, 2004; IR: Trinity Laban Conservatoire of Music and Dance, 2008; R: Nursing, Anglia Ruskin University, 2008; R: Nursing, Brunel University, 2006; R: Nursing, Coventry University, 2006). The analysis also showed that a wide range of assessment types is used to cover the range of cognitive, affective and psychomotor skills required in vocational education; those particularly associated with the assessment of practical psychomotor skills include CD recordings of practical performance, video recordings of practical performance, technical exercises, creative projects, practical (performance), direct observation, OSCEs, clinical examinations, simulations and skills records (Table 4: Chapter 5). As with the teaching and learning approaches, some of these are suitable only for particular subjects. The interviewees thought that some kind of performance was a good method of assessment, (ABRSM: Q.6; RAD: Q.8; QCDA: Q.8; E1: Q.8) and that this can be used to judge not only the skills themselves but other aspects such as underpinning knowledge and affective aspects (ABRSM: Q.6; QCDA: Q.8; E1: Q.8). If additional assessment is required, oral questioning or recorded student commentary was thought to be more suitable than written assessment (QCDA: Q.8).

Pass/Fail v. Grading on practical work

If practical psychomotor skills are to be assessed through a practical performance of these skills, then the question arises as to whether these should be graded or assessed on the competency model of pass or fail (R: Nursing, Northumbria University, 2006). Within the quality documents, both of these systems appear to be in use but the trend appears to be towards the grading of practical work (R: Nursing,

University of Surrey, 2006). The SQA Units are Pass/Fail but the qualifications such as HNC/D also contain an integrated Unit which is graded A, B or C (Appendix XIV p.23). The RAD and ABRSM examinations use grading, but the threshold pass mark is set much higher than is normal in other education, and there are also only a few grades (Pass, Merit Distinction) (ABRSM, 2010c; ABRSM, 2010e; RAD, 2010a; RAD, 2010b; RAD, 2010e; RAD, 2010f). The evidence would seem to point towards a threshold pass for competency plus some grading to distinguish between a competent and an excellent performance.

Teaching & Learning Resources

The quality documents identified the need for and use of a wide range of specialist teaching facilities, some of which are specifically designed to aid the teaching and practise of practical psychomotor skills. These include clinical facilities, animal hospitals, farms, training kitchens and restaurants, leisure and sports facilities, theatres, light and sound, performance venues, rehearsal space, practice rooms and studios (Table 6: Chapter 5). Again, some of these facilities are only suitable for certain subjects. All the Novice classes videoed took place in a fully-equipped training kitchen that was supplied with a full range of commercial equipment, tools and implements. The classes could not have taken place without these resources. The subjects being investigated in this research could not be delivered without the use of these specialised teaching resources; this makes them expensive to deliver as opposed to more cognitive-based programmes.

Summary

Evidence was gathered across the range of data against most of the criteria identified in the literature review; in some cases additional criteria were identified. In the following chapter, this evidence will be analysed against that found in the literature review to determine if any of the findings of the literature review can be confirmed, expanded or even possibly questioned by the evidence gathered here.

Chapter 9: Discussion.

Research Aim 1: To investigate the place of psychomotor skills within vocational education curricula and how these are viewed by different bodies.

The starting point for this investigation was the qualifications frameworks of the SCQF (SCQF, 2009) and the NQF (QCA, 2004). Since commencing this research, the QCA has become the QCDA and a new qualifications framework is being prepared for use in England, Wales and Northern Ireland. However, no level descriptors are yet available for this new framework, so for the purposes of this research the NQF ones have been used.

The generic levels descriptors for the SCQF contain the following areas:

- Knowledge and understanding
- Practice: applied knowledge and understanding
- Generic cognitive skills
- Communication, ICT and numeracy
- Autonomy, accountability and working with others

(SCQF, 2009)

The generic level descriptors for the NQF contain the following areas:

- Intellectual skills and attributes
- Processes
- Accountability

(QCA, 2004)

Relating these to Bloom's learning domains (Bloom, 1956 as cited in Clark 1999; Krathwohl, Bloom & Bertram, 1973 as cited in Clark 1999; Simpson, 1972 as cited in Clark 1999), it can be seen that cognitive progression is clear, and indeed this is the basis for progression up the levels in both frameworks. However, affective attributes are dispersed across different areas, and psychomotor skills are not mentioned, although the word 'skills' is used in other contexts, mainly academic and cognitive.

As the author was aware of the widespread use of psychomotor skills across a range of subjects in vocational education, this study therefore investigated the way in which psychomotor skills were referred to in the literature and in government documents, and finally, in the primary research, across a range of quality documents, to investigate any reasons for the apparent low profile for psychomotor skills in these frameworks.

One of the first issues highlighted by the literature was the observation that many vocational subjects require ability across all of the three domains: cognitive, affective (either by taking account of feelings e.g. in medicine, veterinary medicine, nursing, or by the use of creative ability e.g. in art, music, dance, drama) and psychomotor. Looking in more detail at psychomotor skills, these were considered by Carter (1985) to be essential for many professions and therefore should appear in vocational curricula, and that they should be capable of being communicated by some means (Green, 1997; Stevenson, 2001). Currently, many definitions of psychomotor skills seem to assume that little or no theoretical knowledge is necessary to perform those (Green, 1997). O'Connor (1996) disagrees that no theoretical knowledge is necessary and that vocational education should have a broader foundation; the recent research of Lucas et al (2010) and Claxton et al (2010) supports this view.

From the study of some recent government publications (DCSF, 2008; DCSF, 2008a; DfES, 2007; LSRC, 2004) and academic writers commenting upon these (Dhillon, 2007; Emmerson et al, 2006; Guile & Okumoto, 2007; Lloyd & Griffiths, 2008; O'Donnell et al, 2006; Lucas et al, 2010; Claxton et al, 2010) it would appear that most recent initiatives in vocational education are aimed primarily at those groups of learners who do not have the academic ability to succeed in obtaining qualifications through the route of higher education and need an alternative method of achievement. It may therefore be expedient for government to agree with these definitions as it makes certain professions and their pre-vocational qualifications more feasible for a larger majority to enter (Eraut, 2001). In particular, the move of vocational subjects away from the traditional apprenticeships and into Further and in particular Higher Education may have been a factor in "downplaying" the skills

element and teaching in a more conventional “academic” way for both pragmatic reasons (Alexander, 2007 p.214) and those to do with proving academic rigour and parity of esteem (Carter, 1985; Eraut, 2001)

The issue of parity of esteem is an important one, as certainly in some qualifications frameworks, such as the SCQF, parity of esteem between different types of qualifications is one of the aims of such a framework. However, the issue of parity of esteem is a very complex one. Although some professions that demand high levels of psychomotor skill are highly paid (doctors, particularly surgeons, vets) and many others may also be held in high esteem (ballet dancers, classical musicians) many others such as nurses, physiotherapists and workers in certain areas of hospitality may not be (Claxton et al, 2010; Eraut, 2001, Wood, 1993). Claxton et al (2010) crystallise UK society’s attitudes to vocational education as follows:

“Yet, as we know only too well, societies place some strange judgements of value on practical accomplishments. Cellists, surgeons and architects are esteemed, while folk singers, occupational therapists and civil engineers get less recognition. The occasional celebrity chef, gardener, craftsman, vocalist or footballer serve only to emphasise the more lowly esteem in which cooking, gardening, car mechanics, singing and sports are held – especially within education. ‘Abstract’ is widely seen as more intelligent, more complex, and better than ‘concrete’.”

(Claxton et al, 2010 p. 2)

In addition, Brown (2008 p.11) states that

“Attribution of qualifications to levels is also always a political process, as it depends upon valuing certain types of skills, knowledge and understanding over others, and upon decisions about how demanding it is to make initial qualifications.”

It would seem, therefore, that many professions require psychomotor skills, and that these need to be included in curricula for these subjects. However, the parity of esteem issue is not purely concerned with psychomotor skills, but about UK’s

society's valuation of some types of skills above others. However, if psychomotor skills could be communicated more clearly to non-subject specialists, it is possible that this might help the realisation of the difficulty of these skills, particularly if different levels could be clearly described or exemplified.

Use of the word 'skills'

Rowntree (1985) discusses how skills can be cognitive and affective as well as psychomotor and gives examples of literary criticism (cognitive skill), counselling (affective skill) and violin playing (psychomotor skill). This would seem to give each domain parity of esteem within the curriculum. Carter (1985) was concerned with the demands of the professions when designing curricula; and that these demands should be the main driver in curriculum design. He makes the very important point that "in conventional HE of the academic kind, however, (skill) has not been clearly distinguished from knowledge" (Carter, 1985 p.140); the truth of this statement can be seen in the analysis of generic level descriptors and other quality documents in this thesis. He highlights four main areas of skills that should be assessed: namely information skills, mental skills, action skills (which include psychomotor skills) and social skills. This would seem to imply that generic level descriptors should include cognitive skills (information and mental skills mentioned above), psychomotor skills (action skills) and affective skills (social skills). Carter (1985) was writing about professional education rather than just education in general: can it be possible, therefore, that in the movement of training for the professions into higher education over the last 25 years, their requirements have not been considered in the same way as the traditional "pure" academic subjects such as history and mathematics?

Some useful information for this outcome was found in the analysis of quality documents. The word 'skills' is used a great deal, in many different ways and different contexts; it is presumed that the reader is a subject specialist and understands what is meant from the context (Table 3: Chapter 5). Some of these skills are psychomotor skills; however, many are not. This could cause confusion when used in level descriptors to compare across subjects. Psychomotor skills are

included when the relevant SQA units are analysed (Table 1: Chapter 1) and these are the main focus of the examination syllabi offered by the ABRSM (ABRSM, 2010c; ABRSM, 2010e) and the RAD (RAD, 2010a; RAD, 2010b; RAD, 2010e; RAD, 2010f). The QCDA includes qualifications based on psychomotor skills assessments on the NQF: however, as these were undertaken by subject specialists the need to specify skills more closely was circumvented (QCDA: Q.4). However, better definitions of various types of skills across subjects would assist in any comparison across subjects at the same level. The QCDA representative in interview thought that the lack of dialogue and understanding between subject areas was a potential weakness in the accreditation system, and he himself, as a result of being involved in this research, was going to suggest some cross-subject meetings in an attempt to move towards some common ground and terminology. As the SCQF is yet to accredit any qualifications such as those offered by the ABRSM and the RAD, the author suggests that such meetings might well also take place in Scotland prior to an attempt to place these qualifications at an SCQF level.

Lastly, it is worth considering the areas covered by the generic level descriptors. Currently, in the SCQF (SCQF, 2009) there are five areas: knowledge and understanding; practice: applied knowledge and understanding; generic cognitive skills; communication, ICT and numeracy and autonomy, accountability and working with others. There is, as far as the author can discover, no sound reason based on research as to why these different areas should all have to be at the same level within every subject. Given the cognitive taxonomy is in widespread use and seems to be understood and accepted by the majority of stakeholders, and has a sound basis, this is not something which should be changed, but the other two domains of affective aspects and psychomotor skills should be investigated further to see if in fact a more flexible approach to these areas could be used.

In particular, the author suggests investigation into the separation of these three areas. Using the SCQF as an example, if the cognitive levels remain the same, subjects specialists could decide at what level the affective and psychomotor aspects should be set for their area. There is some precedent for this approach, as currently

qualifications are audited for core skills (communication, numeracy etc.), the level of which can vary according to the subject. This approach could be investigated in further research.

Research Aim 2: To explore the criteria that might indicate a clear progression in psychomotor skills from one level of learning to the next

Identification of possible criteria from the literature

A comprehensive literature review of the main taxonomies of psychomotor skills was undertaken as part of this study and can be found in Chapter 3. This area has provoked considerable research over the years and many different taxonomies have been proposed (Bloom, 1956, as cited in Clark, 1999; Carter, 1985 [Appendix VIII]; Claxton, Lucas & Webster, 2010 [Appendix VII]; Hannah & Michaelis, 1977 [Appendix II]; Gouge & Yates, 2002 [Appendix VI]; Marzano, 2007; Romiszowski, 1981 [Appendices III, IV & V]). These views can be briefly summarised as follows:

- Psychomotor skills are one domain of learning alongside cognitive and affective learning (Bloom, 1956 as cited in Clark, 1999; Krathwohl, Bloom & Bertram, 1973 as cited in Clark, 1999; Hannah & Michaelis, 1977; Simpson, 1972 as cited in Clark, 1999)
- In order to be learned successfully, psychomotor skills benefit from being broken down into individual steps or links which can be put together to form sequences and chains (Argyle, 1988; Gagné, 1966; Grant & Evans, 1994; Romiszowski, 1981)
- The links in the chain may be taught by using various methods including modelling or demonstrating, pictures, physical prompts, words and gestures to prompt the correct actions (Grant & Evans, 1994; Hannah & Michaelis, 1977)
- The links in the chain should be learned in the correct order so that one link in the chain can itself provide the stimulus for the next (Gagné, 1966; Skinner, 1966; Romiszowski, 1981)

- The size of the links or steps in the chain may be a crucial aspect in successful learning: this may depend on the complexity of the task and possibly also on the level of learning? (Grant & Evans, 1994)
- Appropriate reinforcement, both positive and negative, can aid learning (Gagné, 1966; Skinner, 1966; Sloboda et al, 1996)
- Practice of psychomotor skills appears to be a necessity if proficiency is to be achieved (Marzano, 2007; Skinner, 1968; Sloboda et al, 1996)
- Proficiency may lead to the skill becoming automatic so that the exponent can concentrate on other aspects, such as affective aspects (Marzano, 2007)
- Proficiency can be measured using, amongst others, the criteria of accuracy, smooth unhesitant transitions between one link in the chain and the next, and speed (Clark, 1999; Hannah & Michaelis, 1977; Gagné & Driscoll, 1988)
- That successful performance may require the use of cognitive and affective skills as well as psychomotor skills (Billet, 2001; Carline, 1968; Davidson, 1997; Gouge & Yates, 2002; Marzano, 2007; Polanyi & Prosch, 1975 p. 37 as cited in Stevenson, 2001 p. 653; Romiszowski, 1981; Ryle, 1949; Claxton et al, 2010)

From this review of current literature and practice, a list of possible criteria which could be included in level descriptors and could also possibly be used to differentiate between levels of psychomotor skills was identified. These will be discussed later in this section and compared with the primary data. However, it is firstly necessary to look for any possible identification of different levels.

Identification of possible levels of skill

Graham (2005 p. 145) defines competence as within the clinical skills area and also identifies different stages, or levels, on the way to competence: firstly, novice practitioner; secondly, advanced beginner practitioner and lastly competent practitioner. The last stage, that of competent practitioner, is the one at which fitness to practice is achieved and is likely to be the final stage of pre-vocational education. This concept of defining the final level, and then working back in stages from that level, is a model which the author proposes as a useful one when allocating

psychomotor skills to levels in any subject area. The University of Central Lancashire QAA Subject Review Report on Nursing & Midwifery (QAA, 2005) identifies four levels or stages towards competence in clinical skills, as follows: Level 1, development of relevant practice skills; Level 2, application of practice skills in various settings; Level 3, utilisation of appropriate evidence in the furthering of practical skills; and Level 4, development of professional practice (QAA, 2005 p. 2). This gives a type of informal taxonomy of practical skills within a Higher Education context, but focuses more on the context of the skills rather than on their increased complexity; as indeed do the levels within N/SVQs (QCDA 2009). Further refinement on these possible levels is provided by English (1993) and Graham (2005), who both cite Benner's (1984, as cited in English, 1993) model of skills acquisition, which identifies five stages in skills progression, namely novice, advanced beginner, competent, proficient and expert. The expert stage appears to be post-registration and can only be achieved after time spent in practice gaining enough experience to become intuitive. The evidence gathered from the documentary analysis was that different levels of skills did exist and were sometimes differentiated by name (R: Nursing, University of East Anglia, 2006).

From the literature, three possible levels were identified for use in the primary research. Firstly, the Novice stage; that is, students with no previous formal training in the required skills. Secondly, these same students would be observed at the end of their Unit, to see if any criteria might be identified that would distinguish the Novices stage from that which it was hoped they would have reached, that is the Advanced Beginner stage. If the possible definition of this Advanced Beginner stage given below is accepted, then this was indeed the case: the students were becoming secure about the basic skills but further improvement in the physical criteria and complexity was necessary (Table 8, Chapter 6). Finally, two experienced chef lecturers were observed as it was hoped that these might provide some criteria for the Expert stage. The results of this will be discussed later in this section, after discussing the possible identification of further levels.

Identification of the final level of formal (undergraduate) education

In the analysis of quality documents, the final level of formal education appeared to be capable of being defined both academically (R: Nursing, Brunel University, 2006; R: Nursing, University of Sheffield, 2006); and in terms of skills and professional competence (R: Nursing, Brunel University, 2006; R: Nursing, Coventry University, 2006; R: Nursing, DeMontfort University, 2006; R: Nursing, University of Central England, 2006; R: Nursing, University of East Anglia, 2006; R: Nursing, University of Sheffield, 2006; SBS: Dentistry, 2002); this final level is seen as that at which a graduate can exit to safe, competent, unsupervised practice in their profession. (R: Nursing, University of Central England, 2006). There is a clear link between this final level of education and the start of a professional career. Professional competence is not unsurprisingly linked to 'fitness to practice' and 'safe practice' (R: Nursing, University of Central England, 2006). It would seem from this analysis that the QAA itself views fitness for professional practice to be the immediate aim of the final level of formal vocational education; at least at undergraduate level.

In some cases, a final level of practical skill is clearly identified as being important at this stage (R: Nursing, Coventry University, 2006; SBS: Dentistry, 2002). This implies that this level of practical skill can be described, assessed and recognised within the programme of study.

The possibility of levels above the final level of formal education

Additionally, the documents imply further levels beyond formal education, as the graduate is expected to be prepared for lifelong learning (R: Nursing, Brunel University, 2006) through reflective practice (R: Nursing, City University, 2006; R: Nursing, University of Central England, 2006; SBS: Dentistry, 2002). This was also evident in the literature review, although there were differing views as to the levels and their attributes beyond this stage. Benner's (1984 as cited in English, 1993) notion of an expert practitioner is of a practitioner who has gained enough experience for their practice to become intuitive. Billet's (2001 p.435) definition of an expert relates to their ability to perform non-routine tasks. However, Billet later adds to his

definition of the expert the ability to adapt and use one's skills in different contexts. He cites the example of the concert pianist who is expected to perform to the highest standards every time regardless of situational differences e.g. piano, acoustics, repertoire (Billet, 2001 p. 444). This, however, could only possibly happen with experience, so maybe there is some link here to Benner's notion of an expert practitioner (Benner, 1984 as cited in English, 1993) and also to Dreyfus and Dreyfus (1986, as cited in Johnson, 2008 p.178) who argue that tacit, intuitive understanding is a critical difference between expert and novice performances. Certainly, there seems to be evidence for a level above that of a competent practitioner, one that perhaps cannot be taught or assessed by competency schemes such as N/SVQs, and one that can only come after experience has been gained probably following the end of the formal education required (Brown, 2008). Brown (2008) suggests that we should indeed stop regarding the qualification as an end point or final stage, and pay more attention to what happens after qualification is reached; in other words a developmental view of expertise, which would culminate in the ability to teach or support others. He highlights the differences between competency (which could be the end of undergraduate education or its equivalent), the experienced worker level, (which would be closer to Billet's [2001] definition of an expert), and then Brown's expert teacher or mentor. Indeed, he identifies an even further level, that of a world-class expert of performer who has an influence on the way in which the whole subject of their expertise is approached (Brown, 2008 pp. 16-17).

This research did not attempt to investigate any level above that of the Expert, and the definition used for this level is closest to Brown's (2008) definition. i.e. someone who is an experienced practitioner across a range of situations and who is capable of teaching others.

The author suggests, as a working model, the following descriptions of levels of psychomotor skill (these are for psychomotor skills only and have not been linked at other domains):

Novice: a learner at the beginner stage with no previous training in the psychomotor skills set required.

Advanced Beginner: a learner who has learned the basic psychomotor skills required for the skill set but further practice is needed to improved the physical criteria and there are yet more complex skills to be added.

Intermediate: a learner who has mastered all the basic psychomotor skills required for the skills set and can perform them reliably and securely. More practice is still required for the more complex skills and the learner does not yet have the experience to apply even basic skills in a wide range of situations.

Competent: the learner is “fit for practice” and can confidently use all the required psychomotor skills safely. This would be the end stage of pre-vocational education, certainly at undergraduate level. This should be the first level to be set and described by collaboration between industry and education.

Proficient: the learner is a competent worker and can apply all required psychomotor skills. Experience has been gained in applying them across a range of situations. Basic skills will be close to automaticity.

Expert: the expert is competent across all required psychomotor skills and has applied them across a wide range of situations, adapting where necessary. Automaticity has been achieved for all skills in usual situations. The expert is capable of teaching others.

The author agrees with Brown (2008) that there is probably as further level, that of a world-class performer who is capable of ‘pushing the boundaries’ of their subject, but this is beyond the scope of this research.

Identification of possible criteria in the primary research

Finally, in this section, the results of the primary research concerning the possible criteria used to describe and differentiate between levels of psychomotor skills must

be discussed. As well as confirmation of the identified criteria, some evidence was gathered as to whether the importance of these criteria increased as students progressed up the levels.

Physical criteria: accuracy

Accuracy was identified as a possible criterion by Green (1997) and Hannah and Michaelis (1977). From the video data, accuracy increased over the three levels being analysed (NW1D1: 10.47-11.46; NW1D2: 04.30-04.54; E1: 1.07; E2: 0.47 – 5.05). Accuracy of method (E1: Q.6) and of the finished product or performance was considered an important criterion by all the bodies interviewed, (ABRSM: Q.6; RAD: Q.6; E1: Q.6; E2: Q.6; QCDA: Q.6) and one which it was important to instil at lower levels as a basis for future skills development. (QCDA: Q.6). Thus, the primary data confirmed that accuracy could be used as one of the criteria, that it should be established at lower levels and it was expected to increase as progress was made up the levels.

Physical criteria – correct use of tools and equipment

The correct use of specialised equipment and technology was identified in the original SCQF Framework (SCQF, 2001) and this was the only physical criterion to be mentioned specifically in the quality documents (R: Art & Design, Hertford College 2005; SBS: Art & Design 2008; SBS: Dentistry 2002). It was also evidenced through the video data (NW1D1: 0.05; NW1D1:04.34–08.37; NW1D1: 44.00; NW1D1: 50.28; NW1D2: 00.51; NW1D2: 19.10) and in the interviews with the Expert chefs (E1: Q.6; E2: Q.6) as being important to safety as well as underpinning more advanced skills. The correct use of an ever wider range of tools, equipment and materials should increase as the levels increase: this could be seen in the video evidence (NW1D1: 50.28; NW1D2: 00.51). This evidence confirms that the correct use of tools and equipment could be used as a criterion, should be established at lower levels and then expanded at higher levels to include a wider range of more

specialised equipment and possibly more uses for the tools and equipment with which the student is already familiar.

Physical criteria: reliability

Reliability, the ability to produce accurate results by the right method time and time again, was identified in the writings of Gagné and Driscoll (1988), Hannah and Michaelis (1977) and Minton (1997). The primary research for this criterion produced some interesting results. Both the Expert chefs (E1:Q.6: E2: Q.6), the RAD (RAD: Q.6) and the QCDA (QCDA: Q.6) identified this criterion as being important in the interviews: however, the QCDA and the RAD thought it should be seen more at higher levels whereas the Expert chefs thought it was important to establish at lower levels. This may reflect the demands of the different subject areas. In the video evidence, this was not fully conclusive as it was difficult to find instances of exactly the same task having been undertaken several times; however, there was some evidence in the Expert videos as the Expert produced, for examples, cuts of different vegetables that were exactly the same size and shape (E2: 1.14 – 2.34; E2: 3.51-5.05). There was some less conclusive evidence in the Novice videos; perhaps reliability was likely to be less evident at this stage but there did seem to be recognition that this factor was desirable (NW1D2: 09.25). It seems likely that reliability is useful as a criterion but further research needs to be undertaken in this area.

Physical criteria: speed

Speed was mentioned as a criterion by several authors (Gagné & Driscoll, 1988; Hannah & Michaelis, 1977; Minton, 1997). It was found that speed is used as a criterion for certain parts of the ABRSM syllabi; for example, scales and arpeggios have minimum recommended speeds which get faster as one moves up the levels (ABRSM: Q.6; ABRSM, 2010c; ABRSM, 2010e). They also commented that, in musical terms, the illusion of speed can be conveyed to the listener by the style of playing (ABRSM: Q.6). The QCDA, the RAD and the Expert chefs agreed speed

was a criterion that could be used (QCDA: Q.6; RAD: Q.6; E1: Q.6; E2: Q.6). However, there was agreement from the interviewees that speed was not as important as accuracy, or indeed some other aspects, at the lower levels and that these aspects should be correct before speed could be increased (E1: Q.6; ABRSM: Q.6). In the video evidence, the Expert chef could be heard telling the Novices in Week 1 to get it right rather than do it quickly (NW1D1: 35.35); this would also have safety implications. There was some evidence in the Novice and Expert videos that speed does increase with practice and experience (Table 7: Chapter 6). The evidence seems to point to the fact that speed is used as a criterion in some sectors, could be used in others and on the whole is seen as a criterion that is not important at lower levels but which may increase at higher levels. Further research is needed into the use of speed as a criterion.

Physical criteria: correct hand/body position or movement

This new criterion was developed through the analysis of the video data. (NW1D1: 35.35; NW1D1: 37.38; NW1D1: 52.24- 56.18; NW1D1: 21.25-25.12). The correct hand position and movement has to be learned and practiced in addition to the correct use of tools and equipment. This criterion also increased over the three levels being analysed (NW1D1: 35.35; NW1D1: 37.38; NW1D1: 52.24- 56.18; NW11D1: 35.58; NW11D1: 47.15; NW11D2: 4.30-4.54; E1: 5.45; E2: 8.04). The QCDA (QCDA: Q.6) agreed with the Expert chefs (E2: Q.6) that this was an important criterion especially in respect of safety and injury prevention. To the RAD, this was one of the most important criteria of all (RAD: Q.6). However, the ABRSM did not use this as a criterion and did not think it should be used unless it interfered with musical communication (ABRSM: Q.6). This is partly a reflection of their status as an examining body; they see the candidates only once at examination, and this is not enough to comment meaningfully on this criterion. In addition, as music performance is an art form, there were different schools of thought about this and it would be difficult to nominate one position as being correct (ABRSM: Q.6). It is possible that this criterion may not be applicable across all sectors; however, it is applicable to some subjects and is likely to increase as progress up the levels is made.

Other criteria: complexity

Hannah and Michaelis (1977) identified the ability to combine a range of complex psychomotor skills as a possible criterion. The complexity both of individual tasks (seen in the Expert videos) and the number of tasks being undertaken at the same time (between Week 1 and Week 11 of the Novice videos) increased over the three levels being analysed in the video data (NW11D1: 23.26; NW11D1: 42.15; NW11D2: 01.38; NW11D2: 09.23; NW11D2: 30.02-33.34; E1: 05.45-07.19; E2: 03.51-05.05; E2: 08.04-08.26; Table 8: Chapter 6). It is also built into ABRSM and RAD assessments (ABRSM, 2010c; ABRSM, 2010e; RAD, 2010a; RAD, 2010b; RAD, 2010e; RAD, 2010f) and exists in the OPS series of SQA Units (Appendix XII); some of which the Novices in the videos were undertaking (NW11D1: 02.36). Other interviewees agreed this was an important criterion but that it was sometimes hard to judge, especially by students and non-specialists (QCDA: Q.6; E1: Q.6; E2: Q.6). It was pointed out that a really professional performance, whether or music, dance, sport or cooking, could appear effortless and this could be deceiving to those watching without specialist subject knowledge who might not be able to gauge the difficulty of the task being performed QCDA (Q.6). It seems likely that complexity could be used as a criterion, is likely to increase up the levels but is difficult to describe and assess.

Other criteria: degree of autonomy

Autonomy is a recognised criterion in both the NQF (QCDA 2009) and the SCQF (SCQF 2009) and was also identified by Hannah and Michaelis (1977) and Hilton and Pollard (2005). In the primary research, an increase in the degree of autonomy shown by the Novices from Week 1 to Week 11 could be clearly seen in the video data. At the beginning they had to be told exactly what to do by the Expert, have it demonstrated to them, sometimes more than once, before going away to practice it themselves (NW1D1: 0.05-08.37; NW1D1: 22.05-3.29; NW1D1: 24.45; NW1D1: 25.12-25.25; NW1D1: 26.28-28.19; NW1D1: 33.10-34.02; NW1D1: 42.00-43.15; NW1D1: 52.24). By Week 11, however, they were working with a minimum of

supervision, asking questions when necessary and looking up information for themselves (NW11D1: 15.01; NW11D1: 17.16; NW11D1: 19.56). In addition, the QCDA (QCDA: Q.6) and the Expert chefs (E1: Q.6; E2: Q.6) both thought this was an essential criterion to distinguish between levels; Expert chefs also took it to a higher level as students learned to supervise others (E2: Q.6). This question was not asked of the ABRSM as it was not possible to identify this in their examination situations; however, speaking as a teacher, the RAD representative thought this was important to dancers at higher levels, for example in vocational college. This criterion was clearly identified in the primary data and could be used as a criterion across a range of sectors.

Other criteria: affective aspects

The affective aspects were identified as being important in several sectors, including hospitality (Baum, 2006) and nursing (Napier University, 2004). In addition, the ability to combine both affective and cognitive aspects with psychomotor skills was mentioned by many writers (Claxton et al, 2010; Hill et al, 1997; Miller et al, 1998; Mullins & Davis, 1991; Ryle, 1949). All interviewees agreed that this was an important criterion and one which became more important in the higher levels (ABRSM: Q.6; RAD: Q.6; QCDA: Q.6; E1: Q.6; E2: Q.6). Once again, like speed, this was seen as something which could come later, after the basic techniques had been established (E1: Q.6; E2: Q.6; QCDA: Q.6). Different subjects focused on different affective aspects, but creativity (QCDA: Q.6; E1: Q.6; E2: Q.6), communication (ABRSM: Q.6) and interpretation and musicality (RAD: Q.6) were included. Some creativity could be seen in Week 11 of the Novice videos (NW11D2: 18.25; NW11D2: 19.10; NW11D2: 20.19). It was agreed that such aspects as innovation and creativity would be more important to some subjects than others; contemporary dance, for example, might look for these criteria whereas classical ballet and classical music would look for different affective aspects such as interpretation (QCDA: Q.6; RAD: Q.6). It would seem that, although the affective aspects needed might be different for different subjects, nevertheless affective aspects are needed alongside psychomotor skills for their effective use, and their

importance would increase at the higher levels.

Other criteria: evidence of underpinning cognitive knowledge

This was extensively cited in the literature as being important (Graham, 2005; Hoyles et al, 2000; Kneebone & ApSimon, 2001; Mullins & Davis, 1991) as well as the need to combine all three domains i.e. cognitive, affective and reflective (Claxton et al, 2010; Hill et al, 1997; Miller et al, 1998; Mullins & Davis, 1991; Ryle, 1949). Most interviewers agreed that not only was underpinning cognitive knowledge important, but also that it was capable of being assessed through performance (ABRSM: Q.6; QCDA: Q.6; E1: Q.6; E2: Q.6). It was expected by the ABRSM (ABRSM: Q.6) and the QCDA (QCDA: Q.6) that more evidence of this could be expected at higher levels; the performance could not be at the required level if the performer did not understand the style of the music or dance, or was aware of the performance practice from the era, for example. This was considered less important by the RAD but at higher levels knowledge of the different ballet styles did become important and could be assessed through performance. Interestingly, whilst teaching the Novice class, the Expert continually included elements of underpinning knowledge, relating this to the tasks been undertaken by the novices at the time (NW1D1: 5.29; NW1D1: 25.12-25.25; NW1D1: 52.24; NW1D2: 02.30; NW1D2: 07.50; NW1D1: 1.01). So it would seem that underpinning cognitive knowledge is essential to the satisfactory performance of psychomotor skills and could therefore be used as a criterion, increasing in importance as progress up the levels was made.

Other criteria: reflective practice

This criterion was mentioned in the literature (Lashley, 1999 as cited in Lashley & Barron, 2006; Lashley & Barron, 2006; Napier University, 2004; Tribe, 2002) and frequently in the quality documents as being something to be encouraged and which would assist the students in becoming lifelong learners, even after the end of their formal education (R: Nursing, City University, 2006; R: Nursing, University of Central England, 2006; SBS: Dentistry, 2002). This was echoed by the QCDA

(QCDA: Q.6) and the Expert Chefs (E1: Q.6; E2: Q.6) in the interviews. In the video evidence, the Expert encouraged this through the structure of the class; the Novices were showing some evidence of this by Week 11 (NW11D2: 38.17-38.29). E1 (Q. 6) in particular explained that he was trying to move the Novices away from their personal tastes into thinking like a professional chef and making a judgement as to the saleability of the dish and its acceptability to the customer; reflecting on the product as well as the process (E1: Q.6). Once again, this criterion was not mentioned to the ABRSM as it could not be judged in their examination structure. Neither is it assessed through the examination system of the RAD; however, it was confirmed that this was an important criterion and one that professional dancers needed to develop (RAD: Q.6). It would appear, therefore, that this is a criterion that could be used across several sectors, should increase as progress up the levels is made and is essential to establish during formal education so that the student is equipped to be a lifelong learner and hopefully to achieve the levels beyond formal education as described by Brown (2008).

Other criteria: team working

Team working, or 'working with others', is a criterion in use in the NQF (QCDA, 2009) and the SCQF (SCQF 2009). This criterion was not, however, identified in the literature. Team working was mentioned frequently as a 'skill' in the quality documents and as something to be encouraged (Table 3: Chapter 5). It was added to the analysis when reviewing the video data. The Novices in Week 11 showed evidence of team working (NW11D1: 27.16; NW11D1: 32.00; NW11D1: 20.39; NW11D2: 34.05) which was not observed in Week 1. It was also mentioned voluntarily by E2 as being an important aspect of kitchen practice (E2: Q.6). This criterion was not asked about in the interviews as it was only identified at a later stage. It would seem that this is a criterion that could be used across a range of sectors.

From the literature, a number of possible stages or levels were identified and also a range of possible criteria that could be used to describe and differentiate between

these levels. From the primary research, criteria for three possible levels were examined, and in most cases were found to be valid. These are summarised in the table below:

Criteria	Documents	Expert Video	Novice Video	Interviews	SQA Units	Literature	↑↓
Accuracy	No	Yes	Yes	Yes	No	No	↑
Correct use of tools etc	Yes	Yes	Yes	Yes	Yes	Yes	↑
Reliability	No	Yes	Some	Yes	No	No	↑↓
Speed	No	Some	Some	Yes	No	Yes	↑
Correct hand or body position	No	Yes	Yes	Yes	No	No	↑↓
Complexity	No	Yes	Yes	Yes	Yes	Yes	↑
Autonomy	Yes	No	Yes	Some	Yes	Yes	↑
Affective aspects	Yes	No	Yes	Yes	No	Yes	↑
Team working	Yes	No	Yes	Some	Yes	No	↑
Cognitive knowledge	Yes	No	Yes	Yes	Yes	Yes	↑
Reflective practice	Yes	No	Yes	Yes	Yes	Yes	↑

Note: the right-hand column indicates the majority view as to whether these criteria should increase up the levels or not. Where they should, this is indicated by ↑. Where this is not clear, or views differ, this is indicated by ↑↓.

Table 10. *Summary of criteria found in the primary and secondary research.*

From this table, it would appear that accuracy, correct use of tools and equipment, complexity, autonomy, affective aspects, team working, underpinning cognitive knowledge and reflective practice could be considered as possible criteria when attempting more accurate descriptions of psychomotor skills, and to assist in differentiating between levels. Further research is required for reliability, correct hand or body position and speed in particular.

Research Aim 3: To explore ways in which such criteria might be made explicit through being described in learning outcomes: or, if not, of being codified by some other means.

There was evidence in the quality documents that learning outcomes should relate to skills practice and competence (R: Art & Design, Oxford & Cherwell College, 2006; R: Hospitality, Leisure, Sport & Tourism, Bell College, 2006; R: Music, Art & Design, Barking College, 2005) as well as more academic outcomes (R: Art & Design, Oxford & Cherwell College, 2006; R: Music, Art & Design, Barking College, 2005); however, there was insufficient detail to assist in the wording of these. This was also the case in the SQA Unit which was being used in the Novice classes that were videoed: rather it relied on the Performance Criteria and Range Statements, and the level was indicated only through the complexity and number of tasks being undertaken (Appendix XII). This is more understandable when the views of the interviewees are taken into account; the consensus here is that words can be used to describe levels of psychomotor skill but are not sufficient on their own, particularly when trying to describe the more technical rather than the affective aspects (ABRSM: Q.6; QCDA: Q.7; E1: Q. 7; E3: Q.7). This evidence confirms Stevenson's (2001) view that the difficulty in articulating and describing such knowledge may have led in turn to the lack of esteem in which these skills are held, rightly stating that codified knowledge, i.e. knowledge that can be described and written about, is the most highly prized in western society (Stevenson, 2001 p. 648). He also cites of Lundvall and Borrás (1997 p. 13 as cited in Stevenson 2001, p. 651) who stated that:

“Basically, knowledge remains tacit if it is complex and variable in quality, in situations where several human senses need to be used at the same time, when skilful physical behaviour is involved and when understanding social relationships are crucial”.

Perhaps this is why attempts to fully codify the knowledge required for many vocational subjects have not been successful: as noted above, the interviewees agreed that words are not enough (ABRSM: Q.6; QCDA: Q.7; E1: Q. 7; E3: Q.7).

The only suggestions for the wording of learning outcomes for psychomotor skills in the literature are found in Gagné and Driscoll (1988 p. 85). They suggest that any learning outcomes concerning motor skills should use the verb “executes” e.g. “executes the planing of a one-inch board”. Alternative verbs suggested include “perform”, “carry out” or words very specific to the task being undertaken such as “swim” and “throw”. These may be helpful suggestions for the consideration of the wording of any generic learning outcomes concerned with psychomotor skills which might be created in the future.

If words are not sufficient, then attention might well be paid to other means of communicating the desired knowledge. Stevenson (2001) goes on to discuss this very point and deduced that verbal description is only one method of codifying knowledge (Stevenson, 2001 p. 655). He also agreed with Polanyi & Prosch (1975 as cited in Stevenson, 2001 p. 653) who stated the importance of being able to differentiate “what we know from what we can say”. In other words, there is valuable knowledge that is not easy or even possible to describe in purely verbal form. This concept does not fit easily into the system of level descriptors as described in Chapter 1. Currently, therefore, it appears that the system of differentiating between levels of knowledge based on written descriptions is doing a disservice to certain types of knowledge, a view with which Lucas et al (2010) and Claxton et al (2010) agree.

Stevenson (2001) then discusses other way in which knowledge can be conveyed, including music and art, diagrams and other imagery. It is perhaps significant that demonstration is an acknowledged teaching method for many vocational subjects, including nursing, hospitality, music and in particular dance. If these can be taught by these means, is it not also possible that there may be a similar way of actually showing the standards required? Stevenson (2001) hopes there will be a way to make vocational knowledge more accessible and to unpack expertise for examination, for communication and for access (Stevenson, 2001 p.658). He also points out the dangers in attempting this kind of codification, particularly in terms of disaggregating the knowledge so that the ‘big picture’ vanishes, in not recognising connections between knowledge, functions and other aspects, and finally in believing

that all knowledge is verbalisable. This latter aspect is one with which most of the interviewees would agree (ABRSM: Q.6; QCDA: .7; E1: Q. 7; E3: Q.7).

If, then, the kind of knowledge required to for these psychomotor skills cannot be adequately described in words, how can that knowledge be codified in such a way that non-subject specialists can understand it, and differentiate between different levels of that skill? Exemplification of levels could be provided, it was suggested, on video (QCDA: Q.7; E1: Q.7; E2: Q.7). Both the Expert chefs said this would be a useful aid (E1: Q.7; E2: Q.7), and exemplification by video or audio is already used by the ABRSM (ABRSM, 2010b), the RAD (RAD, 2010b) and the Business and Technology Education Council (BTEC) (QCDA: Q.7).

Another strategy which could be considered is the distinguishing of levels through the naming of repertoire (of musical pieces, technical exercises or dishes). This is a method already adopted by the ABRSM (ABRSM: Q.8), the RAD (RAD: Q.8) and by the Expert chefs (E1: Q.7; E2: Q.7).

Here are two possible alternative methods for the codification and differentiation of practical skills, already in use in some subject areas, which could be considered as at least an adjunct to verbal descriptors in the future.

The author suggests a pilot project across two different subject areas to see if exemplification of levels by either or both these means might be possible. Combined with an improvement of the wording of descriptors, this could make the exemplification of different levels much more transparent and therefore possibly easier to set levels across subjects.

Research Aim 4: To consider the implications of the above for the teaching and assessment of psychomotor skills in vocational education

Teaching & Learning Approaches in Vocational Education

The quality documents analysed in Chapter 5 identified that a wide variety of teaching and learning approaches appear to be in use in vocational education. Some of these are specifically designed to aid the teaching and practise of practical psychomotor skills, such as studio practice, workshops, practical classes, performing industrial placements, action learning, skills laboratories and virtual wards (Table 5: Chapter 5). Some of these approaches are obviously suitable only to certain subjects. The video data concentrated on only one of these; the practical class, which will be discussed in more detail below. On the one hand, this range would seem to fit in with the government's view of 'vocational education', where the learning is more 'hands-on' and theory is linked to practice (DfES, 2007 p.6). However, the qualifications studied in the quality documents are all part of the Higher Education system and contain many other non-practical classes also. In fact, most students on the programmes which these documents describe will both undertake practical classes and assessments but also experience the more traditional types of learning in higher education and indeed the traditional written assessments also (Table 4: Chapter 5). The students on these programmes are not the "moderate to low achievers" described by the DfES (2007 p.6) but future doctors, dentists, nurses, veterinary surgeons, professional musicians and so on; including hospitality managers (Mullins & Davies, 1991 p. 23). So the question to be asked is, if these students are capable of both practical and non-practical learning and assessment, what are the virtues of continuing to provide opportunities for practical learning?

The virtues seem to be that firstly, there are some skills where the only point in writing about them is to help others to learn how to do them or how to teach them; playing the piano for example. Secondly, the concept of 'fitness to practice' is an important one for many medically related professions: who would like to experience an injection performed by a nurse who had only written about the right way to do it

(NMC, 2004)? The demands of this type of profession rightly span cognitive, affective and psychomotor abilities (Bloom, 1956 as cited in Clark, 1999), and this means that students in these areas must have the opportunities to learn about and practise in all these areas. This also applies to hospitality managers who need to acquire practical technical skills, affective skills (Barron et al, 2007 p. 123) as well as the more cognitive skills associated with management (Baum, 2006 p.125). Thirdly, certain industries demand that graduates entering their profession must do so with more than theoretical knowledge, and this would include hospitality management (Airey & Tribe, 2000 p. 277; Alexander, 2007; Baker et al, 1995; Ingram, 1999 p. 140; Littlejohn & Watson, 2004; Powell & Wood, 1999 p. 138; Rimmington, 1999) amongst others. It may be however, that those entering the industry as managers may require a different approach when learning practical skills as those entering as chefs (Davis, 1989).

In the professions discussed above, there is no line drawn between the achievers, who are capable of thinking and writing, and those who are capable of ‘doing’ (LSRC, 2004a): these are the same people! If this is the case, and these professions demand these different types of learning in their graduate entrants, then the practical classes are as essential as any other class and deserve the same recognition. That this has resource implications is acknowledged, and this aspect will be discussed later in this chapter.

Teaching & Learning Approaches: Practical classes

When researching the literature on the teaching and learning of practical psychomotor skills, the work of Gagné (1966) was studied. In particular, his theory of the teaching of a practical skills by “Chaining – a sequence of two or more previously learned Ss (external signals) and Rs (responses)” (Gagné, 1966 p.39) was thought to be of relevance. He also points out the importance of each step in the chain being performed correctly and in the proper order (Gagné, 1966 p.87), and emphasises the importance of the instructor who should provide external clues for the selection of the correct next link in the chain. This is also mentioned by Morgan

et al (1988) who emphasise the expertise of the instructor in breaking down the task into suitable sized steps. Once all the links are known to the learner, he or she needs to re-instate them one after the other in the proper order.

This very approach was observed in the Novice videos, particularly in Week 1, and was also mentioned in the interviews by both the Expert chefs (E1: Q.8; E2: Q.8) and the QCDA and RAD (QCDA: Q.8; RAD: Q.8). They also agreed that this approach was even more successful if the students knew what the end product is going to be; this also agrees with Gagné's (1966 p.87) view that the satisfaction of successful completion helps ensure the establishment of the chains and is best done immediately (E1: Q.8). Grant and Evans (1994) speak of three different methods of teaching these chains of tasks: whole task (where the task is not broken down into steps), forward chaining (where the trainee starts with the first step in the chain, then adds the second and so on) and backward chaining (where the trainee completes the final step and gains the immediate feedback of successful completion, then learns the step before and so on). In the video evidence, (Table 8; Chapter 6) a variant of this was observed; forward chaining was used, but the students were given information about what the whole task would be so they could see how the tasks fitted together. In addition, constant feedback was given (Skinner, 1966). So students had the opportunity to watch a demonstration, to "learn by doing" (Skinner, 1968 p.5) and time to build up experience through practice (Davidson, 1997; Farrand et al, 2006; Knight, 1998; Sloboda et al, 1996). E1 confirmed in the interview (E1: Q.8) that he had found these approaches to be the most beneficial when teaching practical psychomotor skills. In addition, the Expert and QCDA interviewees (QCDA: Q.6; E1: Q.6; E2: Q.6) suggested that these skills should be taught alongside the relevant underpinning cognitive knowledge and affective aspects and not in isolation; this theory would agree with by the work of Ryle (1949) who held that knowing how to perform a task requires a combination of cognitive and psychomotor processes. When learning a psychomotor skill, students may understand fairly quickly what they are meant to do: however, actually performing the task correctly and to the required standard may take much longer (Burgoyne & Stuart, 1976 as cited in Carter, 1985); therefore the time to practise is important.

Also observed in the Novice videos was the concept of “prompting” (which can be verbal, gestural, picture, physical or modelling) as the expert lecturer constantly demonstrated and verbally reminded students about the various steps in the tasks they were undertaking (Grant and Evans, 1994). This would also confirm the views of Slaats et al (1999), who found the use of these techniques to be widespread in vocational education. Grant & Evans (1994) discuss how, as the learner becomes more confident, the prompts may be gradually reduced and removed, a technique known as “fading”. This could also be observed in the video data, particularly when the teaching and learning approaches of Week 1 are compared with those of Week 11. These are summarised in the table below (Table 8; Chapter 6):

Week 1	Week 11
Individual steps	Holistic approach to tasks
Simple tasks	Complex tasks
Tasks performed slowly and awkwardly	Tasks performed more quickly and smoothly
Individual tasks	Many tasks simultaneously
Constant Expert demonstrations and explanations	Self-reliance
Constant instructions from the Expert	Novices looking up information themselves in books and reference sheets

(Table 8: Chapter 6. *Differences in teaching and learning approaches between Week 1 and Week 11 of the Novice videos.*)

This difference in teaching and learning approaches from Week 1 to Week 11 could signify that the Expert lecturer has appreciated the advances the students have made from their Novice status in Week 1.

Theory-practice linkages

This was identified as a clear strand in the quality documents (R: Nursing, University of Birmingham, 2006; R: Nursing, Nottingham University, 2006; R: Music, Art & Design, Barking College, 2005) but was integrated with teaching, learning and assessment in the interviews. In the documents, the linking of theory with practice appears to be thought desirable by reviewers, external examiners and students, and that these linkages should appear in both assessment and teaching and learning approaches. This agrees with those concerned with the curriculum in nursing (Bjork, 1995 as cited in Knight, 1998; Hoyles et al, 2000; NMC, 2004; RCN, 2002a; Turner et al, 2003), and was also confirmed by the interviewees who were asked about cognitive underpinning knowledge as a criterion (ABRSM: Q.6; QCDA: Q.6; E1: Q.6; E2: Q.6). The evidence would seem to indicate that an integration of cognitive underpinning knowledge with the practical psychomotor skills to which it is related is desirable as this links theory with practice.

A clear linkage between theory and practice could also aid the motivation of students as they can actually see the relevance to their future of what they are learning, and therefore are more likely to make the effort. This is alluded to in the DCSF report (DCSF, 2008a) which talks about the new initiatives providing “knowledge and skills in a work-related context” (DCSF, 2008a p.26) and also in the research by Bell and Mitchell (2001). This could be clearly viewed in the novice videos, where the Expert lecturer combined items of underpinning knowledge as he demonstrated the practical psychomotor skills (NW1D1: 5.29; NW1D1: 25.12-25.25; NW1D1: 52.24; NW1D2: 02.30; NW1D2: 07.50; NW1D1: 1.01).

Assessment

The analysis of quality documents showed that a wide range of assessment types is used to cover the range of cognitive, affective and psychomotor skills required in vocational education; those particularly associated with the assessment of practical psychomotor skills include CD recordings of practical performance, video recordings

of practical performance, technical exercises, creative projects, practical (performance), direct observation, OSCEs, clinical examinations, simulations and skills records (Table 4: Chapter 5). As with the teaching and learning approaches, some of these are suitable only for particular subjects. The interviewees thought that some kind of performance was a good method of assessment of practical psychomotor skills (ABRSM: Q.6; RAD: Q.8; QCDA: Q.8; E1: Q.8); they also thought, however, that this method can be used to judge not only the skills themselves but other aspects such as underpinning knowledge and affective aspects (ABRSM: Q.6; RAD: Q.8; QCDA: Q.8; E1: Q.8). This would mean that assessment of psychomotor skills, wherever this was taking place, would follow a similar pattern to that used in competency-based vocational training and assessment. This would seem to confirm the findings of James (2001) who, in a study related to that of Mulcahy (2000), found that the views of one of the training managers whom she was interviewing thought that the workers' "performance on the job says it all" (James, 2001 p. 303). QCDA (2009), discussing the N/SVQ system, states that "Assessment is normally through on-the-job observation and questioning... The Assessor tests candidates' knowledge, understanding and work-based performance to make sure they can demonstrate competence in the work-place". This was confirmed by the QCDA representative interviewed who thought that if additional assessment was required, oral questioning or recorded student commentary was thought to be more suitable than written assessment (QCDA: Q.8).

Whereas no-one would deny that in a programme of higher education, a wide range of assessment is desirable and likely to be used, and that many of these will be written assessment, the issue here is the methods used for assessing the practical psychomotor skills in the vocational subjects which are the focus of this study. If bodies such as the ABRSM (ABRSM: Q.6) and the RAD (RAD: Q.6) think that much of the underpinning cognitive knowledge and affective aspects can be evidenced by performance, and this is accepted by the QCDA (QCDA: Q.8) when accrediting their qualifications, there appears to be no reason why, in vocational higher education courses, the practical psychomotor elements cannot be assessed by this means. At present, there appear to be some barriers to this approach; the current

inability to define levels of psychomotor skills in a way that academic institutions understand (which is discussed elsewhere in this Chapter), and perhaps a feeling from some academics that this method has no place in higher education, however suitable it might be to what is being assessed. Most members of quality bodies and academics at whatever level mainly achieved their qualifications and status through their ability to write, along with the skills they may also possess, and they may be unwilling to concede that there may be another method which is equally valid for assessment of these skills. Edwards and Miller (2008 p. 123) call this “academic drift” and states that the unified system within Scotland has exacerbated this. In particular, they observe that this is more acute the higher the level of the qualification (Edwards & Miller, 2008 pp.127-128). At lower levels, the necessity to write as well as perform may be a barrier to achievement as well as a de-motivating factor for some students (Bell & Mitchell, 2001).

If practical psychomotor skills are to be assessed through performance, it is necessary to think about this in relation to the concept of competence. This issue is particularly evident in the nursing literature (Benning, 2004; Carr, 2005; Endacott et al, 2004; Foster & Hawkins, 2004; Graham, 2005; Haigh, 2003; Watson et al, 2002). In nursing, both pass/fail and grading systems are currently in use for the assessment of practical skills (R: Nursing, Northumbria University, 2006) but the trend appears to be towards the grading of practical work (R: Nursing, University of Surrey, 2006). The N/SVQ system (QCDA 2009), when assessing the performance of candidates, only has two possible outcomes, competent or not competent; pass or fail. This system is in use for the SQA HNUs also; only when completing a qualification such as an HNC or HND does the student need to take a integrated Unit (Appendix XIV p.23) which is graded at A, B or C. This is closely related to the systems used by the ABRSM (ABRSM, 2010c; ABRSM, 2010) and the RAD (RAD, 2010a; RAD, 2010b; RAD, 2010e; RAD, 2010f), where the threshold “pass” mark is set much higher than is normal in other education, and there are also only a few grades (Pass, Merit, Distinction) to distinguish between the performance of candidates above that mark. These systems form a ‘half-way house’ between a strict competency model, and the more traditional forms of assessment, where although there may be a “threshold” or pass mark, nevertheless several possible grades of acceptable

performance are available. It may be that this model could be adapted for use in higher education programmes and may be more acceptable than a pure competency model. As the concept of competency is so relevant to this discussion, some aspects of this will be briefly discussed below.

There appear to be two main approaches to the concept of competency in the literature and therefore defining exactly what is meant by competence is an issue (Johnson, 2008 p. 177). On the one hand, those mainly concerned with technical and work-based education and training favour the view that the main object of competence is competent performance, and that this performance also demonstrates any necessary knowledge. From this viewpoint, the opinion of the QCDA (QCDA: Q.8) and even those teaching on SQA Units (E1: Q.8) is not surprising. On the other hand, those taking a wider look at education, and those concerned with medical and allied professions, seem to think that competent performance is important, but is not the only thing required in order to be a competent practitioner, and other aspects should be included (Claxton et al, 2010; Gillis & Bateman, 1999 as cited in Johnson, 2008 p. 177). Graham (2005) writing about nursing education, describes competence in this field as: “safe practice, knowledge, ethical practice, performance of clinical skills and limited independence (Graham, 2005 p. 145). Bouriscot and Roberts (2006) also defined a similar “minimally competent” stage in medical education. It is probably broadly true to say that in vocational higher education, which is designed to equip the graduate for a future long-term career, that competent performance is not enough, but that does not mean to say that it is not also necessary when preparing for the world of work.

It seems that, for competency-based training throughout the world, even if there is no actual agreed definition, nevertheless those involved in competency-based training and education seem to have a broadly common concept of what is meant by competence. However, another related issue is defining competence in relation to the final level of formal education. When examining the description of the purpose of N/SVQs (QCDA, 2009), one of the aims is to facilitate entry into the workplace, further education or training. Also, competence can be at different levels, as evidenced by the N/SVQ framework (and by Bouriscot & Roberts, 2006), so

competence can be seen as a stage or a level in itself, not the ultimate end to formal education and training. Haffenden and Brown (1989 p.7) discussed the differing views of competence found in their study, and thought that a definition of competence might include breadth, the ability to perform in a variety of situations, and being equipped for progression, amongst others. Many authors agree that competence is not a final stage and progression is still possible (Billet, 2001 p. 444; Brown, 2008 pp. 16-17) though they may disagree as to the names and attributes of these levels. This is discussed in more detail elsewhere in this chapter.

It is worth here to briefly consider the views of Hager (2004 p. 214) who suggests the need to define who is capable of being competent, how to recognise a competent performance and how a competent level of performance might best be acquired. The concept of recognising a competent performance is necessary when discussing the assessment of competence and indeed agreeing the threshold standard of competence appears to be a further barrier to its more widespread implementation in vocational higher education (Bouriscot & Roberts, 2006 p. 87; Taras, 2007 p. 365).

Finally, an example of good practice identified in the literature which was confirmed through this research. Edwards and Miller (2009) discuss in some detail the assessments for some of the HN Units on the Professional Cookery, where students worked on a portfolio of dishes and an accompanying presentation that they could take to interviews to demonstrate their ability. In other words, they put together a high quality presentation which was acceptable in an academic context as an assessment but that which also was related to their main area of interest (the cooking) and relevant to their future job (Edwards & Miller, 2009 p. 129). They go on to describe the good practice of students working in the college training restaurant which is open every day to “real” customers: in other words, fulfilling both the requirements of the unit assessment but also of real value to the world of industry for which the students are preparing (Edwards & Miller, 2008 p.130). In other words, the links and closeness to industry are enough to give the course its prestige without the need to introduce more “academic drift”. These examples of good practice were

confirmed through the interview with E2 (Q.6) where he discussed both the portfolio and the students' experience in the training restaurant and kitchen as meaningful assessment which allowed the students to achieve as well as relating the assessment to the world of work.

Teaching and learning approaches appear to be working well across the range of subjects studied in this research. The issues come when the assessment of psychomotor skills is required. The author suggests trials of a model using performance assessment across two different subjects, which could be used to assess underpinning cognitive knowledge and affective aspects also. Furthermore, it is suggested that these models have a threshold pass mark of competency, with possibly one or two grades above this to distinguish the adequate student from the exceptional.

Teaching & Learning Resources

The quality documents identified that a wide range of specialist teaching facilities is necessary in vocational education, some of which are specifically designed to aid the teaching and practice of practical psychomotor skills. These include clinical facilities, animal hospitals, farms, training kitchens and restaurants, leisure and sports facilities, theatres, light and sound, performance venues, rehearsal space, practice rooms and studios (Table 6: Chapter 5). Again, some of these facilities are only suitable for certain subjects. All the Novice classes videoed took place in a fully-equipped training kitchen that was supplied with a full range of commercial equipment, tools and implements. The classes could not have taken place without these resources. The subjects being investigated in this research could not be delivered without the use of these specialised teaching resources; this makes them expensive to deliver as opposed to more cognitive-based programmes. This may be one of the reasons underlying the move towards workplace qualifications, as some authors seem to imply (Carter, 1985 p.135; Eraut, 2001 p.94); it could be the educational institutions either are not sufficiently up-to-date with the world of work, or that their assessment systems are not suitable, or that the resources required in

terms of staff, time, and equipment are too expensive (Alexander, 2007; Baker et al, 1995). Some authors argue that it should be possible to study hospitality management as a discipline without the strong vocational focus and therefore the practical psychomotor skills that the industry requires (Morrison & O’Gorman, 2008 p. 216); this does not seem to have been suggested for medicine or nursing, however. Further research needs to be conducted as to what level of psychomotor skill is necessary for just-qualified hospitality managers in today’s industry. Once these entry standards have been set, then a judgement could be made as to the best way of ensuring that graduating students are competent to the level required.

Chapter 10: Conclusions and Recommendations.

Introduction

In this chapter, firstly the contribution made to professional knowledge by this study will be discussed; secondly the contribution to professional practice will be outlined together with some recommendations for change. The chapter concludes with a reflection on the limitations of the research, the research process and suggestions for further studies in the future.

Contribution to professional knowledge.

The aim of qualification frameworks to include and equate many different types of qualifications is a laudable one. However, the basis for this is primarily cognitive, and generic level descriptors do not discriminate between the many different types of skills. This research highlights the way in which psychomotor skills, an essential part of many subjects within vocational education, have been given insufficient emphasis in frameworks, possibly due to the difficulties in describing them. In addition, this study confirms a possible duality of approach by government and society to psychomotor skills.

This research confirmed the view that different levels of psychomotor skill are possible and levels such as Novice, Advanced Beginner and Expert were observed and differentiated. A working model defining possible different levels of psychomotor skills and their descriptions can be found in Chapter 9. In addition the research investigated some criteria that could be used to differentiate between levels of psychomotor skills, and these results can be viewed in the Table 10, Chapter 9. These results highlight some criteria that could possibly be used when placing qualifications using a high level of psychomotor skills on qualifications frameworks and also in further developing generic level descriptors so that psychomotor skills can be more clearly included.

The difficulties in describing and differentiating between levels of psychomotor skills across a range of subjects were confirmed by this study. It was found that different subjects had found their own solution to this, including specialist notation, and exemplification by various means such as audio and video recording, and by repertoire.

This research observed the teaching and learning of a set of psychomotor skills in practice and found that the methods identified in the literature were in successful use across a range of different subjects. In addition, the teaching and learning approaches reflected the progress made by the students being observed from the Novice to the Advanced Beginner levels. These are summarised in Table 8, Chapter 6.

The research also confirmed the importance of this teaching and learning taking place in a practical situation with specialist facilities. The linking of theory and practice, also identified as important in the literature, was observed in practice and found to be a useful and motivating approach for students. Assessment of psychomotor skills was found to be most valid by performance of these skills; suggestions were made that many cognitive and affective aspects could be assessed by this means also. When students exit vocational education, even as graduates, many professions require them to have competent psychomotor skills along with the other attributes they may be required to have as a graduate entrant to their profession.

Contribution to professional practice and recommendations for change as a result of the study.

Those concerned with vocational education, at whatever level, should be aware of the possibilities existing in the qualifications frameworks to improve the esteem in which their subjects are held. Those concerned with using these frameworks across a range of qualifications should be aware of their current limitations in respect of psychomotor skills in particular, and when these frameworks are revised consideration could be given to the way in which skills, particularly psychomotor skills, are described and placed within these frameworks. In particular, it was discovered in the course of this research that allocation of subject qualifications took

place within subjects and no cross-subject moderation took place. The QCDA representative in interview thought that the lack of dialogue and understanding between subject areas was a potential weakness in the accreditation system, and he himself, as a result of being involved in this research, was going to suggest some cross-subject meetings in an attempt to move towards some common ground and terminology. It is recommended that the SCQF should take similar action before an attempt to level qualifications such as those offered by the ABRSM is made. .

In particular, the author suggests investigation into the separation of the three domains of learning in the generic level descriptors. There appears to be no theoretical underpinning that justifies the fixing of these different aspects of learning at the same level. No alteration to the cognitive levels is suggested.

From Table 10, Chapter 9, it would appear that accuracy, correct use of tools and equipment, complexity, autonomy, affective aspects, team working, underpinning cognitive knowledge and reflective practice could be considered as possible criteria when attempting more accurate descriptions of psychomotor skills, and to assist in differentiating between levels. If different levels of psychomotor skills are indeed possible, then professionals concerned with vocational education could usefully examine the practical module or unit descriptors in use in their institutions to ascertain the clarity of this differentiation currently. In particular, thought could be given to the final level of psychomotor skill in students exiting to the industry.

This study identified the use of exemplification by video and by repertoire as being two methods, already in use in some subject areas, which could be used to exemplify psychomotor skills in addition to verbal descriptions based on the criteria identified above. The author suggests a pilot project across two different subject areas to see if exemplification of levels by either or both these means might be possible. Combined with an improvement of the wording of descriptors, this could make the exemplification of different levels much more transparent and therefore possibly easier to set levels across subjects.

The teaching and learning approaches studied in this research appear to be working well across the range of subjects; however, there are more issues concerning the assessment of psychomotor skills. The author suggests trials of a model using performance assessment across two different subjects, which could be used to assess underpinning cognitive knowledge and affective aspects also. This would link the theoretical and practical aspects of the subject which might motivate more students. Furthermore, it is suggested that these models have a threshold pass mark of competency, with possibly one or two grades above this to distinguish the adequate student from the exceptional. In particular, the final level of competency required in the subject for the student to exit into industry should be investigated within each vocational subject area, and assessment at this level should be designed to test and ensure this is achieved.

Reflections on the limitations and restraints of the research

There were several limitations to this research. Firstly, more video data was collected than could be usefully analysed within the parameters of an EdD dissertation, therefore the analysis was limited in terms of the time and skill sets analysed. However, it is hoped to undertake further analysis using the existing data for use in articles for publication. In terms of the documentary analysis, again this had to be limited as to the number of documents analysed. The author could only undertake the primary research for the video data in one college and with one group of students: it is hoped at a later date to repeat this process in other institutions with other students and possibly within other subjects also.

Difficulties were experienced in setting up some of the interviews. Some compromises had to be made: the interview with the QCDA had to take place on the telephone as no satisfactory schedule for both parties could be arrived at. The RAD headquarters in London, although extremely helpful, were also not able to schedule an interview with the most knowledgeable faculty member, and instead an experienced teacher and Board Member was interviewed. This meant that one or two

questions were not answered with the particular knowledge required; however, her insights as a teacher were invaluable in the answers to other questions.

Originally, it was hoped that the results of this research would be more explanatory than exploratory, and would result in a workable taxonomy of psychomotor skills. Although this proved not to be possible once the author was more familiar with research methodology, nevertheless the author feels that this exploratory study has taken a step towards achieving this aim.

A brief personal reflection on the research process, and suggestions for further research.

This study was undertaken in order to complete the requirements for the award of the EdD qualification. In the professional life of the author, both the ability to undertake research and the qualification itself are of importance. More personally, the author is herself the manager of a group of staff, many of whom have either completed doctoral level study or are undertaking it currently. This is being encouraged by the author's organisation and it was felt important that the author herself undertook the kind of study that she was encouraging others to do. However, the main driver for this study was the difficulty the author had experienced when involved with curriculum development for the Higher Still initiative; it was this that highlighted the issue that the lack of a working taxonomy for psychomotor skills led to their position of lesser importance and inappropriate assessment, even in a development intended to achieve parity of esteem across academic and vocational qualifications. At the end of this study, the author realises that there is remarkably little cross-subject communication, even within bodies whose purpose is to equate these qualifications with each other. The unusual subject knowledge of the author has perhaps given a slightly different perspective to the subject being investigated.

In terms of the research process, one of the reasons for undertaking the EdD qualification was to gain some knowledge about research methods and complete a research project under supervision. These personal aims have now been met and it is

the intention of the author to publish articles based on this research, and to undertake further research in this area in the future.

Further research is recommended in the following areas;

Firstly, to examine the generic level descriptors in order to investigate the possibility of separating the cognitive level descriptors from other aspects, psychomotor skills in particular. A trial audit could be conducted across two subject areas to ascertain what level of psychomotor skill is required across what levels, and draft descriptors, possibly with other means of exemplification, prepared.

Secondly, further research is required in terms of the usefulness of reliability, correct hand or body position and speed as criteria for the differentiation and description of psychomotor skills.

Thirdly, further research could usefully be conducted as to the level of psychomotor skill necessary for newly qualified hospitality managers in today's industry. Once these entry standards have been set, then a judgement could be made as to the best way of ensuring that graduating students are competent to the level required. This could then be differentiated from the levels required by newly-qualified chefs, which would assist curriculum developers, lecturers, students and industry to be clear about the skills required in these different industry occupations.

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Appendix I: SQA HN Unit Analysis

Unit	Los	Practical	Level	Credits
DN6M	4	1	7	2
DN6T	3	1	8	2
DN6C	3	1	6	2
D4EO	4	1	7	2
F2CL	3	1	8	1
DN6L	3	1	6	1
F1BB	3	0	8	1
F1BC	4	1	8	2
D4EK	4	1	7	2
F1BD	4	1	7	2
F1BL	4	1	8	2
F1BE	3	1	8	1
F1BF	4	1	8	2
DP3H	3	1	8	1
DP3J	3	1	8	0.5
DP3N	4	1	8	2
DN6V	4	1	8	1
F1BG	4	1	6	1
DN6X	3	1	7	2
DN6Y	3	0	7	2
DN5T	3	2	7	1
DN5W	2	1	7	1
DN64	3	2	7	1
F1D7	4	3	8	2
DV5R	2	0	8	1
F0MF	2	0	8	1
DV5W	3	1	8	1
F1H4	4	1	8	2
F1D8	3	1	8	2
DV5T	3	1	7	1
DX03	3	0	7	1
F1W6	3	1	7	1
F1TY	3	1	8	2
F1GX	3	0	8	2
F1EB	2	0	8	1
F1H3	3	0	8	2
F0MT	3	0	8	1
F1H1	2	1	7	1
F0MM	4	0	8	1
F568	4	0	7	1
F5GE	3	1	7	1
F5LK	4	1	8	1
F5CS	3	1	7	1
F5LL	4	1	8	1
F1MT	3	1	7	1

F1MV	4	1	8	1
F1CM	3	0	8	1
F1D9	3	1	8	1
DV67	3	1	7	1
DX5J	3	1	8	1
F1TD	3	0	7	1
F1TB	3	1	8	1
F5GD	4	3	7	1
F7BY	4	2	7	2
DE2N	3	2	8	2
F1CN	3	1	7	1
F1CE	3	0	8	2
F1E9	3	1	7	1
F1CF	3	1	8	2
F1D5	3	1	8	1
F1CL	4	2	7	2
F1CH	4	2	7	2
F1CP	3	0	8	2
DV96	3	1	7	1
DX31	4	2	8	1
DX01	3	1	7	1
DX5V	4	4	8	1
F03J	4	2	7	1
DV63	3	1	7	1
DX5L	5	1	9	2
DV64	4	3	7	2
DX5N	4	1	8	2
F1TX	3	1	7	1
F1H7	4	1	8	1
DX5D	4	1	9	2
F01H	4	1	8	2
DX5C	4	1	9	2
DV98	2	2	7	1
DX39	2	2	8	1
F1W5	2	2	8	1
F1TC	2	1	7	1
DW9T	3	2	7	1
F1CG	3	1	8	2
F1D4	3	1	8	2
F1H0	2	2	7	1
F1GY	2	2	7	1
DV9A	1	1	7	1
DX38	2	2	8	1
F1CA	3	0	8	2
F1CS	3	1	8	2
F1TN	4	1	8	2
F1N0	3	1	8	1
DV9C	3	0	7	1
F192	4	1	8	2
F193	3	1	7	2

DV92		3	1	7	1
F1CV		3	1	8	2
DX64		3	1	8	1
DX66		4	1	9	2
F1CT		3	2	8	2
F1CR		3	1	8	2
DW72		3	2	7	2
F03L		3	1	7	1
F03M		3	3	7	1
DX62		3	1	8	1
DW9V		2	1	7	1
F1CW		3	0	8	2
F1EA		3	1	8	2
DW9W		3	1	7	1
F03V		3	0	7	1
F07M		3	1	7	1
F03G		4	4	7	1
F1CD		3	0	8	2
F1CC		3	0	8	2
DV93		3	1	7	1
F18B		4	1	8	1
F194		3	1	7	1
F03H		3	3	7	1
F0X7		3	0	8	1
DX3G		3	1	8	1
DM0W		3	1	7	2
DX2Y		3	1	8	1
F0P9		3	1	7	1
F1V5		3	1	8	1
DV5Y		3	1	7	1
DW73		3	1	7	1
DX5G		2	1	8	1
DJ2G		3	1	7	1
F1MX		3	1	7	1
F3XT		2	1	7	1
F1MY		3	1	8	1
F3X4		4	0	8	1
F3X5		2	1	8	1
F3Y2		2	1	8	1
F3Y3		3	1	7	1
D69C	NOT AVAILABLE				
F3XV		3	1	7	2
F3XW		3	1	8	2
F3X6		2	2	7	1
F3XL		2	1	8	1
F3XX		3	1	7	2
F3Y4		2	2	8	1
F3Y5		4	4	8	2
F3Y6		4	4	7	2

F3Y7	3	3	7	2
F3X7	3	1	8	2
F3XK	2	1	8	1
F3Y8	3	1	8	1
F3XJ	4	1	7	2
F3Y9	3	1	7	1
F3XY	3	2	8	2
F3Y0	3	3	8	2
F3Y1	3	2	7	2
F1TP	3	1	8	1
F1W8	3	1	7	1
F18D	3	3	7	2
F1F2	4	2	8	2
F1F6	3	1	7	1
F1P9	3	2	7	1
F1PB	2	2	7	1
F26S	4	3	8	2
F26T	3	1	7	1
F1PC	4	4	8	2
F26R	4	1	8	2
F1F5	3	2	7	1
F1F4	4	2	8	2
F1PD	2	2	7	1
F1PG	2	2	7	1
F1PH	4	2	7	1
F26W	4	3	7	1
F1PJ	4	3	8	3
F1PK	4	4	7	2
F18W	4	2	7	2
F18V	3	0	7	1
F18T	3	3	8	2
F191	3	3	7	2
F18X	6	5	6	2
F1PR	3	2	7	1
F188	3	3	7	2
F1PT	4	3	8	2
F18R	3	3	8	2
F18P	3	3	7	2
F1PV	3	2	8	1
F1PW	2	2	7	1
F190	3	2	8	2
F18Y	3	2	7	1
F18N	3	2	8	1
F18M	3	2	7	1
F18G	3	3	8	2
F18L	3	3	7	1
F18H	5	4	8	2
F18J	5	4	7	2
F1F3	3	2	8	2
F18K	3	2	7	2

F18F	3	2	8	1
F187	3	2	7	1
DW74	3	1	7	1
F0XM	3	1	8	2
F0XX	3	1	7	1
F0XF	3	0	8	1
F0XW	3	2	8	1
F0Y0	3	0	7	1
DW75	3	0	7	1
F0Y3	4	3	7	1
F0Y4	2	2	8	2
F0XN	4	2	8	2
F0XS	3	3	8	2
F0Y5	3	1	7	1
F0XT	4	3	7	1
F0Y7	3	3	8	1.5
F0XV	3	1	8	1
F1WX	3	3	7	1
F1WY	2	1	7	1
F1H5	3	2	9	2
F1TR	3	2	7	1
F1TS	3	2	8	1
F1R8	3	2	8	2
F1R7	3	2	8	2
F1W7	3	2	7	1
F1RS	3	3	7	1
F1WR	3	2	8	2
F1TT	3	2	8	1
F1RT	4	4	7	1
F1RR	4	1	7	1
F1RV	3	2	7	1
F1RW	4	3	7	1
F1W1	4	4	7	1
F1RP	3	2	7	2
F0P4	3	1	6	1
F0P5	3	1	7	1
F0PB	3	1	7	1
DP8J	2	2	7	1
DP8K	2	2	8	1
F1NE	4	0	8	2
F1NC	4	0	8	1
F1ND	3	2	8	1
DP8L	2	2	7	1
DP8M	2	2	8	1
F1NF	3	3	8	1
F1NB	2	0	7	1
F1M3	3	0	7	1
F1NW	4	3	8	1
F1LD	4	3	7	1
F1LF	3	1	7	2

F1LG	3	2	8	2
F1NV	5	1	8	1
F1NT	4	2	8	1
F1NS	3	0	7	1
F1LJ	3	0	8	1
F1LH	3	1	7	1
F1VR	3	0	7	1
F1LM	5	3	8	2
F1LL	4	3	7	2
F1LP	3	3	7	1
F1LS	3	3	7	2
F1LV	3	3	8	2
F1R4	3	0	8	1
F1NR	3	3	8	2
F1NP	3	3	7	1
F1YD	3	3	7	1
F1YE	4	4	8	1
F1NN	3	2	7	1
F1R5	3	3	8	2
F1R6	3	3	7	1
F4S3	2	0	8	1
F1LR	3	3	8	1
F1NJ	4	3	8	2
F1NK	3	3	7	1
F1V9	3	3	8	2
DP8N	2	2	7	1
DP8P	2	2	8	1
F1M1	3	3	7	2
F1M2	3	3	8	2
DG44	3	2	7	2
DG45	4	3	8	2
DP90	2	2	7	1
DP91	2	2	8	1
F1LT	3	3	7	2
F1LW	3	3	8	2
DG3K	4	2	7	2
DG3L	3	3	8	1.5
DG3M	3	2	7	1
F1VA	3	2	7	1
F1VB	4	2	8	1
DG3R	3	2	7	1
DG3T	3	1	7	1
F1LN	3	1	8	1
DG3V	4	1	7	2
DM2M	4	1	7	2
DG3X	3	0	7	1
DG3Y	3	0	8	1
DG42	4	1	8	1
DP8R	3	1	7	1
DP8T	4	3	7	3

DP8V		4	2	8	5
DG46		3	3	7	1
DG49		2	0	7	0.5
DG4A		4	2	7	1
DM2N		3	2	7	1
DG4D		3	3	7	1
DG4E		3	3	7	1
DJ39		3	1	7	1
DP93		3	1	7	1
DP8H		3	2	8	1
DG4N		3	2	7	2
DG4R		4	3	8	2
DJ1V		3	0	7	1
D5PW	NOT AVAILABLE				
DG4F		3	1	7	1
F38A		3	0	8	2
F38B		3	2	7	1
F38D		4	2	7	2
F38E		4	1	7	2
F386		3	2	7	2
DG4J		4	1	7	2
F605		4	0	7	1
DR17		2	1	8	1
DJ22		4	0	7	2
DJ28		2	1	6	1
F603		3	2	7	3
F604		3	2	8	3
DJ2X		2	2	7	1
DR19		2	2	7	1
DJ31		3	2	7	1
DJ2A		3	1	7	2
DR2L		2	2	8	2
DR1A		2	1	8	1
F7NV		5	5	7	2
F7NW		4	4	8	2
DP8X		3	2	7	3
DP8Y		4	3	8	3
DG4W		3	3	7	1
DG4C		3	3	8	1
F3CH		3	2	8	2
F3CM		4	0	7	1
F3CL		4	1	7	2
DF8V		4	1	7	2
F5DL		3	1	7	1
DD2T		3	0	8	1
DP2J		2	1	7	1
DD2L		3	1	8	1
DA8N	NOT AVAILABLE				
DD31		3	1	7	1

DW64	4	1	8	1
DD34	2	1	7	0.5
DD36	3	1	7	1
D4X3	NOTAVAILABLE			
DP8D	4	2	8	1.5
F4SC	3	2	8	2
DP2F	2	1	7	0.5
DA90	NOT AVAILABLE			
F1LY	3	2	7	1
F1LK	3	2	8	1
DL3C	3	0	8	1
F35X	4	0	7	1
DL3H	3	0	7	1
DL3V	3	0	7	1
DL43	3	0	8	3
DL4L	3	0	7	1
DL4M	3	0	7	1
D39X	NOT AVAILABLE			
A784	3	1	7	1
DL3E	4	0	7	1
DL3G	4	1	7	2
DL3L	3	1	6	1
DL41	4	0	7	2
DL3D	3	0	7	1
DL3N	4	0	7	1
DL3P	3	0	7	1
DL3F	5	3	7	1
DL3J	3	1	7	1
DL3K	4	1	7	2
DL3M	4	0	8	2
DL44	3	3	7	1
DL45	4	3	7	2
DL48	3	2	7	2
DL49	4	4	7	2
DL42	4	4	8	2
DL3Y	3	3	7	2
DL46	3	3	7	2
DL47	3	3	7	2
F1B9	4	0	7	1
DP69	4	0	8	1.5
DP64	3	1	7	1
DP65	4	3	8	2.5
DW94	3	0	7	1
DW95	3	0	7	1
DP66	3	1	8	1
DW96	4	0	7	1
F2GP	3	0	7	1.5
DP68	6	2	8	2.5
DD33	3	0	7	0.5

DW9D	3	0	7	1
DW9C	4	0	7	1
DW9E	2	0	7	1
DP6C	3	1	7	0.5
DP6E	3	1	7	1
DW93	3	0	7	1
DD30	3	2	7	0.5
F1M5	2	2	7	1
F1M6	3	0	7	1
F1M7	3	2	7	1
F1M8	3	1	7	1
F43K	3	2	8	2
F43L	3	1	8	3
F43M	2	1	8	2
F43N	3	1	8	2
F1MB	4	2	7	1
F1MA	3	2	7	1
F43P	3	1	8	2
F43R	3	1	8	2
F3G6	2	1	8	2
F43S	4	1	8	3
F69A	4	0	6	1
F1MC	3	2	7	1
F3G8	3	2	8	2
F43T	2	1	8	2
F3G9	3	2	8	2
F3G7	3	3	8	3
F1MD	3	2	7	1
F1ME	4	1	7	1.5
F0K9	3	2	7	1
F3NK	5	1	7	2
F2GS	4	0	7	1
F3SC	3	0	7	1.5
F3SF	3	0	7	1
F2GM	4	2	7	1
D45G	NOT AVAILABLE			
DH54	3	1	8	1
DH2N	3	1	8	1
F1J3	4	2	7	1
DP3A	3	1	8	2
DP3C	3	1	8	2
F3TT	4	1	8	1
DJ06	4	0	7	1
F3TW	4	0	7	1
DJ03	3	1	7	1
DJ09	5	1	8	2
DJ0C	4	0	8	1
DJ0F	4	1	8	1
DJ0A	4	1	8	1

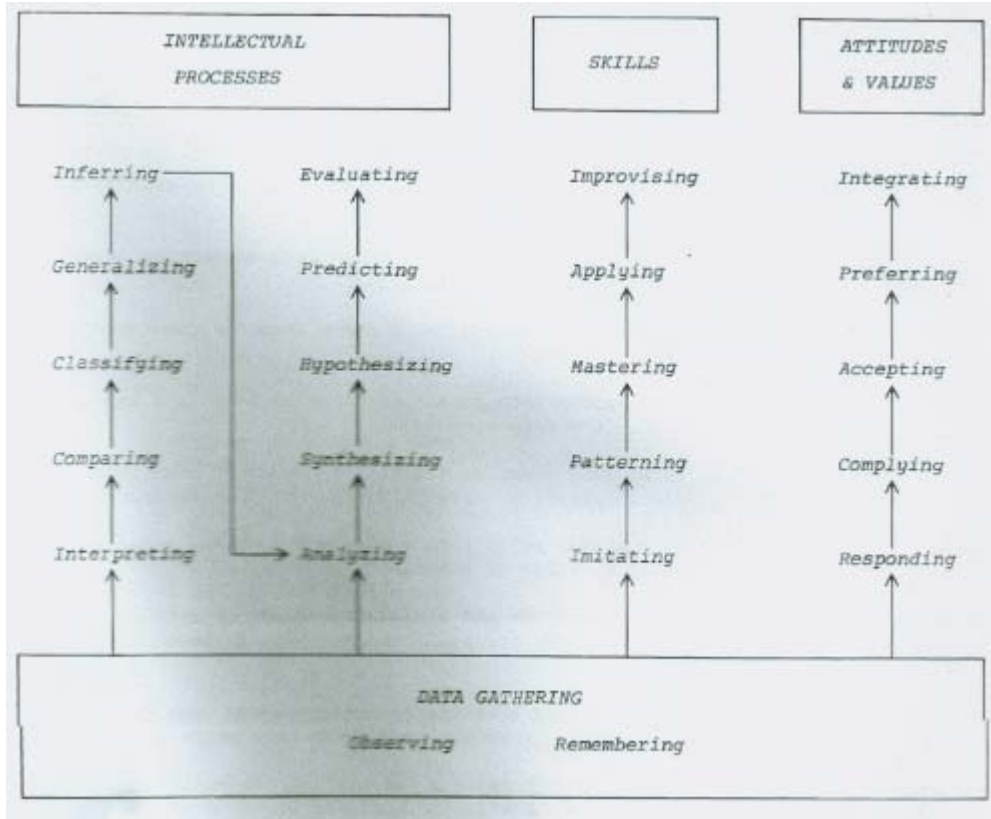
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DJ0D	4	0	8	1
DJ02	3	0	7	1
DJ0E	3	0	8	1.5
DJ0G	4	2	7	1
F3V3	4	2	7	1
DJ0K	3	0	7	1
DJ0J	3	0	7	1
DJ0L	3	0	7	1
DX0A	6	1	7	2
D2W3	4	3	7	1
D2W7	3	3	7	1
D2W8	4	3	7	0.5
D2W4	4	4	8	1
D2W9	3	2	6	0.5
D2VY	3	2	7	0.5
D2W5	3	2	6	0.5
D2W0	3	2	7	0.5
D2W6	3	3	7	0.5
D2W2	4	2	7	0.5
D2WA	3	2	7	0.5
D2W1	4	1	6	1
F4N0	4	2	7	1
F4N1	5	2	7	1
F4MV	5	2	8	1
F50E	4	3	7	1
F500	4	2	8	1
F4Y7	3	2	7	1
D2WL	4	1	7	1
D2WT	3	2	7	1
D2WM	3	2	7	1.5
D2WK	3	0	7	1
D2WR	3	2	7	2
D2WP	3	2	7	1.5
D2WS	5	4	6	1
D2WN	4	3	7	1
D2WY	6	3	7	1
D2WV	5	3	7	1
D2WX	6	6	8	2
D2X1	5	4	7	1
D2WW	5	5	7	1
D2X0	6	4	8	1
D2XC	6	4	7	2
D2XH	4	2	6	1
D2XF	4	2	7	1.5
D2XE	4	3	6	1
D2XD	3	2	6	1.5
D2XG	3	3	7	1
DR0J	3	2	6	1
DR0H	3	1	6	1

D2X8	4	3	7	1
D2X9	4	3	7	1
D2X4	3	2	7	1
D2X7	3	1	8	0.5
D2X3	4	4	7	1
D2X5	3	0	7	0.5
D2XA	3	1	6	0.5
D2X2	4	4	8	1
D2Y3	5	0	6	1
DN4H	3	2	7	1
DX07	3	2	7	1
DX0C	3	1	7	1
DX02	3	1	7	1
F0MH	4	1	8	2
DX09	3	0	7	1
F0MJ	3	0	8	1
F0MW	6	1	8	2
DW79	3	0	7	1
DW7A	5	2	7	2
DW7C	3	1	7	1
F0MP	6	2	8	2
DW7D	3	3	7	1
F0MX	4	1	8	2
DW7E	2	0	7	1
F0MY	5	4	8	2
F1WS	3	2	8	1
F1W2	5	3	8	2
F1XX	4	4	8	2
F1X0	4	4	7	1
F1W3	2	2	8	2
F1W4	5	3	8	2
F1X7	5	3	6	1
F1X8	3	2	7	1
F1WP	2	2	7	1
F1WW	4	2	8	2
F1WV	3	2	7	1
F1X6	4	0	6	1
F1PL	3	3	7	1
F1PM	3	2	7	1
F26X	3	3	8	2
F26P	3	3	8	1
F1PX	2	2	8	1
F1PY	2	2	7	1
D2WB	3	2	7	1.5
D2WC	4	3	7	1
D2WE	3	1	6	0.5
D2WD	3	3	6	1
D2WG	4	3	6	1
D2WH	3	3	8	1.5
F0XD	4	1	7	1

F0XE	2	1	6	0.5
F0XG	3	1	6	1
F0XR	4	4	7	1
F0Y9	2	1	6	1
F0XC	2	1	6	1
	1771	859		

Appendix II: Hannah and Michaelis (1977)

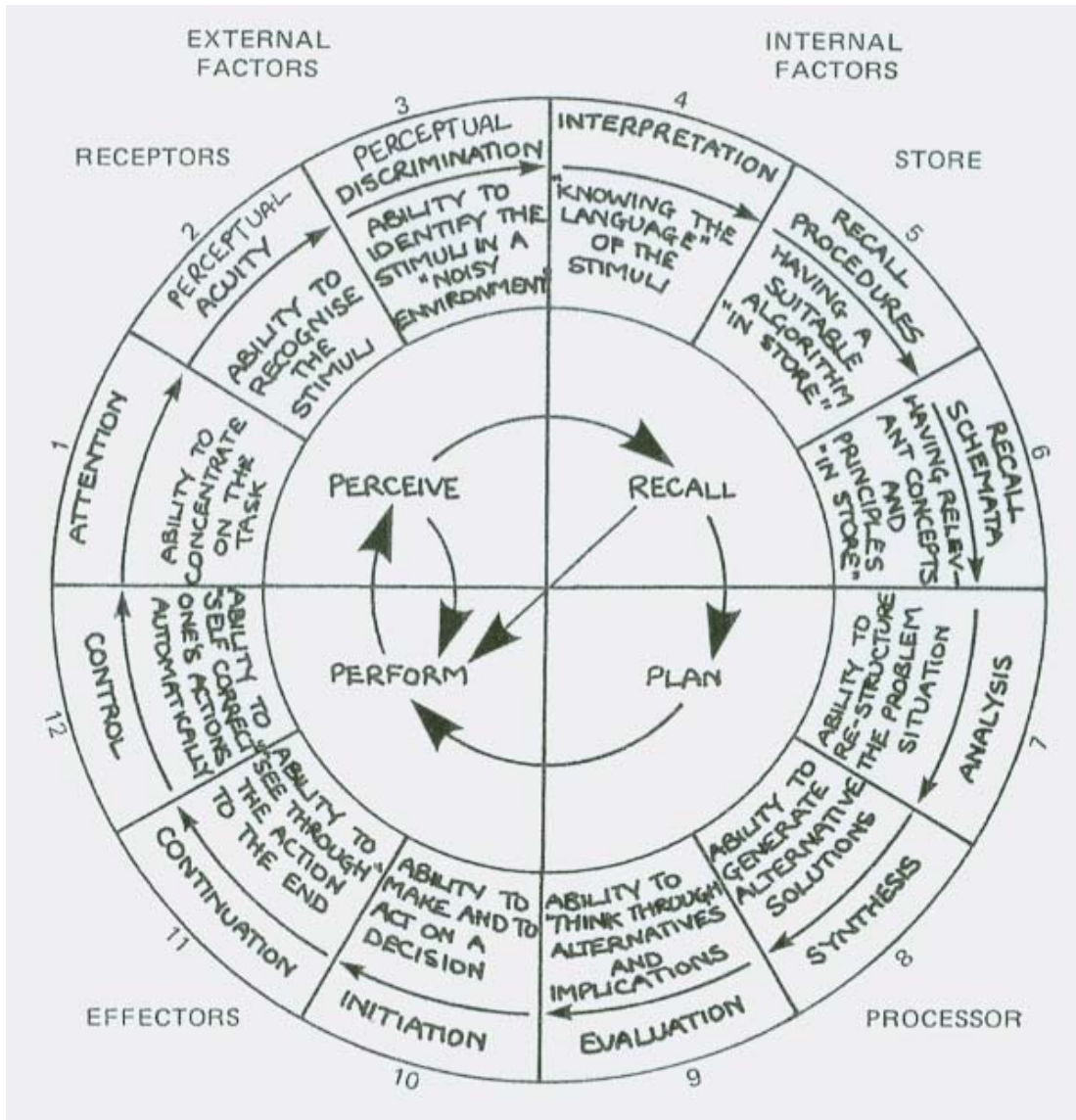
Framework for Instructional Objectives



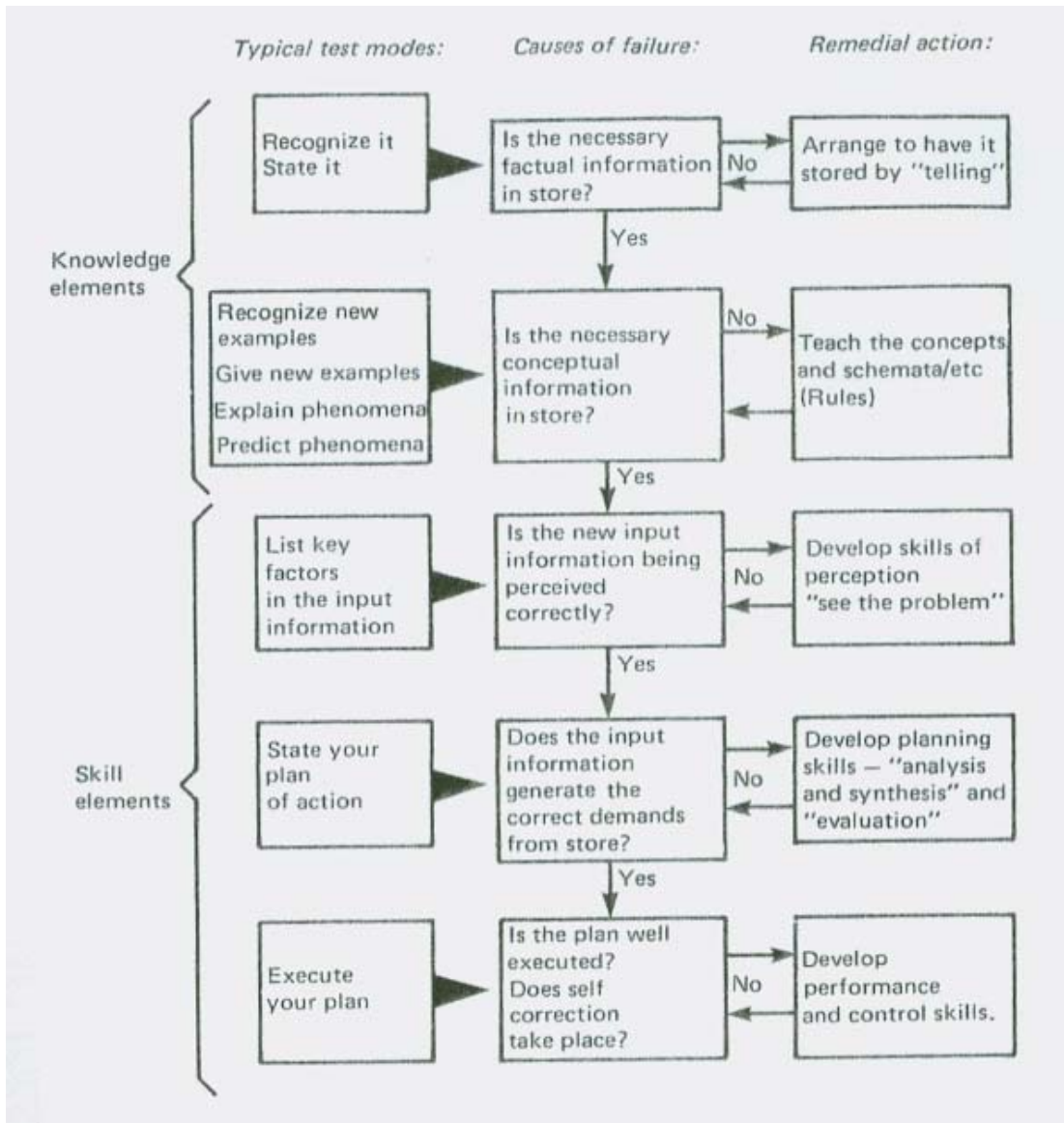
Appendix III: Romiszowski (1981 p.253) Skills Schema

		TYPE OF 'KNOWLEDGE CONTENT'	
		← REPRODUCTIVE SKILLS	→ PRODUCTIVE SKILLS
MAIN SKILL CATEGORY		Applying procedures (algorithms).	Applying principles and strategies.
COGNITIVE SKILLS	Decision-making, problem-solving, logical thinking, etc.	Applying a known procedure to a known category of 'problem', eg dividing numbers, writing a grammatically correct sentence.	Solving 'new' problems; 'inventing' a new procedure, eg proving a theorem, writing creatively.
PSYCHOMOTOR SKILLS	Physical action, perceptual acuity, etc	Sensori-motor skills; repetitive or automated action, eg typewriting, changing gear, running fast.	'Strategy' skills or 'planning' skills; arts and crafts, eg page layout design, 'road sense', playing football.
REACTIVE SKILLS	Dealing with oneself; attitudes, feelings, habits, self-control.	Conditioned habits and attitudes, eg 'attending, responding and valuing' (Bloom taxonomy), 'approach/avoid behaviours' (Mager).	'Personal control' skills, developing a 'mental set' or a value system (Bloom) 'self-actualization' (Rogers).
INTERACTIVE SKILLS	Dealing with others.	Social habits; conditioned responses, eg good manners, pleasant tone, verbal habits.	'Interpersonal control' skills, eg leadership, supervision, persuasion, discussion, salesmanship.

Appendix IV: Romiszowski (1981 p. 257) Skills Cycle



Appendix V: Romiszowski (1981 p.263) Causes of failure



Appendix VI(i): Gouge and Yates (2002 9.1)

Table 9.1 Taxonomy for the visual arts

<i>Piagetian level</i>	<i>Symbolic representation</i>	<i>Frames of reference</i>	<i>Critical reflection</i>	<i>Intention, causality and experimentation</i>	<i>Classification</i>
<i>Concrete</i>	Use signs and symbols in own work Recognize common visual symbols, such as peace Draw/create natural representations Use stereotypes as a shorthand way to communicate ideas Use basic understanding of scale, perspective and proportion to create an artwork	Recognize and describe aspects of a genre, content of work Accept and offer alternative accounts of their own work and the work of others	Reflect on the artistic intentions of self and others Respond to artworks using descriptive language based on experience and/or evidence	Link cause and effect Make assumptions about an artwork based on direct experience or evidence Create a simple hypothesis about causes or intentions	Sort and group artistic ideas and styles, such as Impressionists and Cubists Put artists into a series or sequence using given criteria, such as date, technique or style Recognize similarities and differences in artworks using two variables, such as media and time Recognize the usefulness of classification systems to communicate about art
<i>Concrete transitional</i>	Use a range of symbols and icons to create meaning Develop personal symbolic language for example use pictograms to describe a personal experience Interpret hidden/implicit messages in an artwork by 'reading' symbolic meaning, such as heart motif Understand and refer to universal explanations for symbols, for example a dove for peace Change ratios and perspective to carry meaning in own artwork	Recognize and describe similarities and differences between artistic styles Construct alternative interpretations of artworks Recognize the importance of context to the interpretation of artworks Recognize and interpret abstract forms Recognize how style affects meaning	Refine own work in the light of feedback Identify and reflect on the use of artistic techniques to create meaning, for example the use of multiple viewpoints to express time and space Explain own work to others giving a logical sequence for decisions made, such as analysis and synthesis through sketchbook work Justify opinions and actions in creating own art	Make and apply rules, such as systems painting based upon an artists self-imposed restrictions on the use of media Find and test solutions to artistic problems Make conscious changes to an artwork in order to achieve a desired effect Explore a number of different approaches in the creation of an artwork Identify an artist's explicit purpose	Re-classify an artwork in the light of new evidence/experience and explain reasons for new classification Compare and contrast artworks using reasoned arguments based on more than two variables
<i>Formal operational</i>	Recognize and speculate on intentions for the use of symbols in the work of others Create and use coherent symbolic systems, for example from given information, speculate on the meaning of artworks from other cultures Use in a complex way, ratio, proportion, scale and perspective to convey meaning	Make explicit implicit meaning Select the appropriate style in their own work in order to achieve the desired effect Experiment systematically with style and media in order to explore their impact on meaning, such as representing a 2-D object in 3-D	Understand and evaluate the artistic intentions of self and others using justified argument and counter argument Use deductive reasoning to piece together evidence to form a judgement about an artist's intention, for example utilize standpoints such as form, content, process as a mood to develop discussion and pursue personal study through sketchbook Make clear and justifiable connections between their own work and the work of others Offer and justify multiple interpretations when viewing artworks	Create a reasoned hypothesis about an artwork Make the invisible visible, for example making concrete things that only exist in the imagination - Surrealism Experiment with artistic rules and conventions in order to achieve a particular response, for example Magritte and altered scale Deduce an artist's implicit purposes Experiment with a wide variety of media and styles in order to communicate meaning	Recognize that an artwork consists of multi-variables and be able to categorize and re-categorize aspects of a work using three or more variables, such as form, content, process and mood Make rich comparisons between two or more artworks simultaneously Create and justify own system for classifying artworks to judge and evaluate its impact Recognize that all classification systems are purposeful and driven by social constructs such as style and convention, which can be re-defined or created

Appendix VI(ii): Gouge and Yates (2002 9.2)

<i>Piagetian level</i>	<i>Symbolic representation</i>	<i>Frames of reference</i>	<i>Critical reflection</i>	<i>Intention, causality and experimentation</i>	<i>Classification</i>
<i>Concrete</i>	Create naturalistic representations, such as drum roll for thunder Use simple accepted conventions to create and/or interpret music, such as rhythmic patterns	Recognize basic features of a piece of music, such as rhythm Accept and offer alternative accounts of the meaning of a piece of music	Talk about the intentions of self and others, and be able to describe their personal responses using descriptive language Reflect on the intended effect of a piece of music	Link single cause and effect, for example minor key for sad Make assumptions about intent based on direct experience/evidence Create a simple hypothesis about causes and/or intent	Identify similarities and difference in music, for example mood and pace Sort, group and sequence musical styles using two variables at a time and provide reasons for decision Sort and group musical ideas and styles, such as classical and orchestral
<i>Concrete transitional</i>	Make and/or interpret style allusions, for example the use of 'Dies Irae' in the 'Fantastic' Symphony Construct and explain alternative responses to music Use different sounds to represent 'hidden messages' in music based on universals, such as drum roll for threat/danger/suspense Use given codes systematically, such as musical notation, keys and modes	Recognize and describe a range of musical styles and structures, such as blues Recognize the effect of context on the way music is created, performed and heard Construct and justify alternative interpretations and accounts of a piece of music Select the appropriate elements of music to realize a stated intention	Evaluate how variables affect music, such as loud, soft, tempo, instrumentation and context Justify opinions and actions Appraise a piece of music with an awareness of intention, form and structure Refine work and opinions in the light of feedback	Find and test solutions to musical problems, such as how to represent a landscape in music Use a limited range of variables, such as rhythm, pitch and instrumentation to create a particular effect Make justifiable assumptions about a composer's intention Compose a piece of music in a recognized style or genre	Compare and contrast pieces of music using more than two variables simultaneously Re-classify in the light of new evidence Recognize, identify and categorize musical structures, conventions and styles
<i>Formal operational</i>	Look for and interpret hidden messages in music without guidance or help Create and systematically use coded methods for 'writing' or 'reading' music, such as graphic scores Create musical metaphors juxtaposing styles and genres, such as Jimi Hendrix 'Star Spangled Banner' Combine two or more rhythmical patterns to create a new musical meaning	Make explicit implicit meanings in own and others work Understand how genre and style effect meaning Explore systematically the use of genre, style and structure to achieve desired effects, such as the creation of mood and the use of instrumentation Explore the effect of transferring or transposing different elements of music	Use argument and counter-argument in order to evaluate the musical compositions of self and others, and be able to justify their arguments by referring to their musical knowledge Critically analyse the effect of such features as instrumentation, structure and style on the success of a piece of music Make justifiable connections between own work and the work of others Give multiple and justifiable interpretations of a piece of music using a variety of musical dimensions/elements	Purposefully experiment with musical rules in order to achieve a desired effect Use a complex range of variables, such as melody, style and pace, to create a musical composition Speculate on a composer's musical intentions and evaluate his/her success, for example by evaluating the choice and effectiveness of such aspects as use of instruments, style and so on	Make rich comparisons of two or more pieces of music, identifying multiple variables, such as context, style and instrumentation Make justifiable connections between own work and the work of others using three or more musical dimensions Recognize that a musical performance consists of multi-variables and be able to categorize aspects of a work using three or more variables

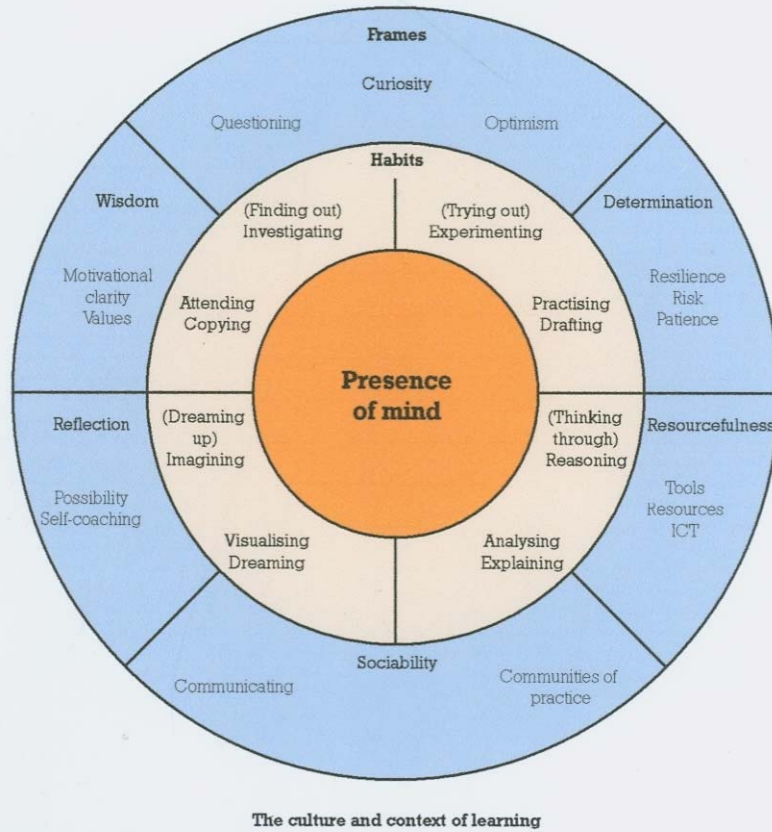
Appendix VI(iii): Gouge and Yates (2002 9.3)

Table 9.3 Taxonomy for drama

<i>Piagetian level</i>	<i>Symbolic representation</i>	<i>Frames of reference</i>	<i>Critical reflection</i>	<i>Intention, causality and experimentation</i>	<i>Classification</i>	<i>Narrative seriation</i>
<i>Concrete</i>	Use gesture and mime to suggest place and character Use stereotypes, recognizing that they are culturally determined Use of simple signs and symbols to aid narrative or characterization, for example a cloak for a king or queen	Recognize and describe basic features of a piece of drama, such as flashback Accept and offer alternative accounts, recognizing that the interpretation of a person's behaviour is dependent on context Recognize and understand stereotypes within a defined context Describe events from different viewpoints	Reflect on the motives of self and others and respond using descriptive language Comment on the use and impact of style and structure	Link a single cause and effect Make assumptions about motivation and/or artistic intent based on evidence and/or direct experience Create a simple hypothesis about causes	Recognize that a piece of drama consists of a number of variables, such as movement and dialogue Recognize the elements of style and genre, for example forms of characterization and non-linear narrative Sort dramatic work into groups using given criteria, such as is it true?	Sequence events into a justifiable order Awareness of beginning middle and end of narratives Tell a story or create a drama from a particular point of view
<i>Concrete transitional</i>	Use non-verbal methods to create meaning and character Recognize that the relative position of characters conveys the nature of relationship and narrative Use objects and characters in a non-naturalistic way to convey meaning Use simile and analogy to carry meaning, for example particular characters representing different viewpoints in an argument	Recognize and describe a range of dramatic styles and structures, for example direct address and abstract Use a range of dramatic styles to enhance meaning and to re-shape meaning, for example flashback and soliloquy Represent the same story in a variety of styles Construct alternative interpretations, taking into account different viewpoints	Justify opinions and actions Recognize and explain bias and propaganda Refine work and opinions in the light of feedback Identify and reflect upon the use of dramatic structures to create meaning	Find and test solutions to dramatic problems, such as how to show a character ageing Use dramatic/theatrical techniques in order to create an intended effect, such as silence, voice tone and level Link a character's motives to his/her actions and relate this to the consequences of his/her actions	Compare and contrast pieces of work, ideas, arguments or outcomes Re-classify in the light of new evidence Recognize conventions and styles as a means of categorizing the component parts of a drama	Re-order events in order to change their original meaning or create a new story Use complex narrative techniques, such as flashback Speculate on a number of different endings
	Use style allusions to generate meaning, such as top hat for posh Use icons to carry meaning, such as a flag for nationalism Recognize the use of metaphor	Construct alternative endings of own work and the work of others Construct alternative realities and their defining parameters for own work	Construct and justify logical, critical arguments and counter-arguments about a piece of drama			Tell the same story or create a drama from a variety of different viewpoints
<i>Formal operational</i>	Create dramatic impact by using the relative positions of characters and the performance space to create meaning Create metaphors and analogies to communicate meaning The ability to recognize and speculate on the use of symbols by others	Make explicit implicit meaning in own work and the work of others Explore the relationship between style and genre and their impact on meaning Juxtapose apparently conflicting or contradictory genres and styles to achieve a novel effect, such as the use of a game-show format in a trial	Use deductive reasoning to piece together evidence to form a judgement about a piece of drama Make clear and justifiable connections between their work and the work of others Understand and evaluate the dramatic intentions of self and others and construct arguments to justify critical conclusions	Analyse part or whole relationships in terms of intent and causality Create more complex hypotheses involving a number of variables Use a range of styles and structures and theatrical techniques in order to create an intended effect, for example the use of lighting to create mood and atmosphere Identify and evaluate the intentions of others	Make rich (multi-layered) comparisons of two or more pieces of drama Select appropriate conventions and styles in order to achieve a desired effect Recognize that a drama performance consists of multi-variables and be able to categorize aspects of a work using three or more variables Recognize that all theatrical	Create a narrative which carries more than one meaning at the same time, for example metaphor and parable Recognize layers of meaning in others' narratives

Appendix VII: Craxton, Lucas and Webster (2010)

Figure 1 **The 4-6-1 model**



Taxonomy of Objectives for Professional Education

TABLE I. Summary of a taxonomy of objectives for professional education

Personal Qualities	Mental Characteristics	Attitudes and Values	Personality Characteristics	Spiritual Qualities	Being
	Openness Agility Imagination Creativity	Things Self People Groups Ideas	Integrity Initiative Industry Emotional resilience	Appreciation Response	
	Skill	Mental Skills	Information Skills	Action Skills	
Organisation Analysis Evaluation Synthesis		Acquisition Recording Remembering Communication	Manual Organising Decision making Problem solving	Co-operation Leadership Negotiation and persuasion Interviewing	
Knowledge	Factual Knowledge		Experiential Knowledge		Knowing
	Facts Structures Procedures Concepts Principles		Experience Internalisation Generalisation Abstraction		
			Cognitive	Affective	

Appendix IX: Database of evidence

	Physical Criteria				Degree of Autonomy	Evidence of UK (Cognitive)	Evidence of Affective
	Speed	Accuracy	Reliability	Correct use			
Novice Observation	Some	Yes	Yes	Yes	Yes	Yes	Yes
Expert Observation	Some	Yes	Yes	Yes	No	No	No
Interviews	Yes	Yes	Yes	Yes	Some	Yes	Yes
SQA Stats	No	No	No	Yes	Yes	Yes	No
Quality Docs	No	No	No	Yes	Yes	Yes	Yes

	Evidence of Reflective Practice	Complexity	Creativity
	Novice Observation	Yes	Yes
Expert Observation	No	Yes	No
Interviews	Yes	Yes	Yes
SQA Stats	Yes	Yes	No
Quality Docs	Yes	No	Yes

Appendix X: Interview Analysis Grid

Categories	1	2	3	4	5	6	7	8
RAD	Louise Murray	Self Employed	RAD Dance Teacher Board Member	Board Member	RAD Syllabus	Not cognitive Yes to all others	Technical exercises	Break down Practical assessment
ABRSM	Nigel Scaife	ABRSM	Syllabus Director	Member Expert Group	No criteria Experience	Speed Accuracy Affective Cognitive	Repertoire	Practical assessment
QCDA	Kevin Barton	QCDA	Curriculum Advisor	Direct Involvement	No Criteria Subject Specialists	Yes to all suggested criteria	Video examples	Practical assessment Oral questions
Expert 1	Tommy Brunton	Glasgow Metropolitan College	Chef Lecturer	No	Experience	Yes to all suggested criteria	Dishes & video	Practical assessment Oral questions
Expert 2	Willie McCurrach	Glasgow Metropolitan College	Chef Lecturer	No	Experience	Yes to all suggested criteria	Dishes & video	Practical assessment Oral questions

Appendix XI: NVivo8 Coding

Free nodes: Any other criteria

Performance

Assessment of skills

Professional standards

Levels

Learning outcomes

Fitness to practice

Theory/practice

Teaching (and learning)

Tree nodes: Affective knowledge

Cognitive knowledge

Complexity

Creativity

Degree of autonomy

Physical criteria: accuracy

correct hand/body position or movement

correct use of tools and equipment

reliability

speed

Reflective practice

Skills: clinical skills

competence

performance skills

practical skills

professional skills

psychomotor skills

specialist skills

technical skills

vocational skills

Team working

Appendix XII: SQA Unit

NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION**STATEMENT OF STANDARDS****UNIT NUMBER:** 5130196**UNIT TITLE:** ORGANISATION OF PRACTICAL SKILLS 3

Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME

1. PREPARE FOR TASKS THAT REQUIRE A MINIMUM OF TWELVE COMPONENT PARTS AND AT LEAST EIGHTEEN PROCESSES IN THEIR PRODUCTION

PERFORMANCE CRITERIA

- (a) The tasks are correctly named.
- (b) The component parts are correctly identified.
- (c) The processes used are correctly identified.
- (d) All equipment required is correctly listed.
- (e) All component parts are requisitioned prior to commencing.

RANGE STATEMENT

The range is fully expressed in the performance criteria.

EVIDENCE REQUIREMENTS

Recorded evidence that the candidate prepares for tasks on four separate occasions.

OUTCOME

2. PREPARE A PLAN OF WORK FOR THE TASKS CHOSEN

PERFORMANCE CRITERIA

- (a) A logical sequence of work is planned to ensure effective time management.

RANGE STATEMENT

The range is fully expressed in the performance criterion.

EVIDENCE REQUIREMENTS

Recorded evidence that the candidate plans a logical sequence of work to a given timescale on four separate occasions.

OUTCOME

3. CARRY OUT THE TASKS TO ACHIEVE THE DESIRED OUTCOME

PERFORMANCE CRITERIA

- (a) The tasks are completed within the given time.
- (b) The tasks are presented in the quantities planned.
- (c) The tasks are presented in a commercially acceptable condition.
- (d) The component parts are processed to given specifications.

RANGE STATEMENT

The range is fully expressed in the performance criteria.

EVIDENCE REQUIREMENTS

Performance evidence that the candidate presents the completed tasks on four separate occasions.

OUTCOME

4. USE SAFE WORKING PRACTICES

PERFORMANCE CRITERIA

- (a) Appropriate clothing is worn.
- (b) A clean and tidy work station is maintained.
- (c) All equipment is used in a safe manner.

RANGE STATEMENT

The range is fully expressed in the performance criteria.

EVIDENCE REQUIREMENTS

Performance evidence that the candidate uses safe working practices on four separate occasions.

ASSESSMENT

In order to achieve this unit, candidates are required to present sufficient evidence that they have met all the performance criteria for each outcome within the range specified. Details of these requirements are given for each outcome. The assessment instruments used should follow the general guidance offered by the SQA assessment model and an integrative approach to assessment is encouraged. (See references at the end of support notes).

Accurate records should be made of the assessment instruments used showing how evidence is generated for each outcome and giving marking schemes and/or checklists, etc. Records of candidates' achievements should be kept. These records will be available for external verification.

SPECIAL NEEDS

In certain cases, modified outcomes and range statements can be proposed for certification. See references at end of support notes.

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NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION**SUPPORT NOTES**

UNIT NUMBER: 5130196

UNIT TITLE: ORGANISATION OF PRACTICAL SKILLS 3

SUPPORT NOTES: This part of the unit specification is offered as guidance. None of the sections of the support notes is mandatory.

NOTIONAL DESIGN LENGTH: SQA allocates a notional design length to a unit on the basis of time estimated for achievement of the stated standards by a candidate whose starting point is as described in the access statement. The notional design length for this unit is 40 hours. The use of notional design length for programme design and timetabling is advisory only.

PURPOSE This unit will allow candidates to develop the skills in work co-ordination established in earlier units. Satisfactory performance will confirm that the candidate can bring together, order and integrate a variety of skills previously acquired. The unit is transferable to a number of different contexts.

SQA publishes summaries of NC units for easy reference, publicity purposes, centre handbooks, etc. The summary statement for this unit is as follows:

This unit will allow you to plan work, requisition components, identify equipment and integrate practical skills to complete tasks involving work co-ordination using twelve components and eighteen processes.

CONTENT/CONTEXT As this is a generic (multi-discipline) unit the statement of standards are applicable to different curriculum areas whereas this content/context section is related specifically to practical cookery/bakery skills.

As the title of the unit indicates it is essential that candidates have had previous practical experiences prior to commencing.

The practical elements of the unit should enable candidates to integrate the component skills from the planning stage through to presentation.

Corresponding to outcomes 1-4:

1. A task in this context is a dish or a recipe. Component parts are the ingredients. Processes are the steps to be carried out to successfully complete the dish/recipe, such as weighing; measuring; sieving; mixing; trimming; melting; sealing; dicing; simmering; seasoning; rolling out; proving.

Candidates should be encouraged to choose dishes from a given range rather than the tutor identifying the practical activity for them.

Examples of the actual dishes/recipes at this level can relate to one relatively complex dish with twelve ingredients and eighteen process steps or to two or even three simpler dishes such as a standard soup and bread rolls or three hor's d'oeuvres or three afternoon tea items.

The equipment to be used throughout the practical must be identified by candidates and all ingredients requisitioned prior to commencing.

2. Ample guidance and direction will require to be given to candidates to enable them to plan an effective sequence of work related to the practical activities. Emphasis should also be placed on the timing of the practical to ensure that candidates can produce the tasks within the given timescale.
- 3&4. Standard recipes will be followed for most dishes and the timescale should be set by the tutor. There should also be scope for innovation within recipes if appropriate to the occasion and candidates.

Emphasis must be placed on the following:

- keeping to given times;
- producing correct number of portions;
- presenting food to a commercially acceptable standard;
- wearing correct uniform;
- safe and hygienic working methods;
- carrying out procedures in correct manner;
- correct use of equipment.

APPROACHES TO GENERATING EVIDENCE The learning and delivery approach should allow outcomes to be achieved in a candidate-centred, participative and practical manner. It is recommended that this unit is used as the vehicle for utilising (in an integrated manner) the foods prepared within commodity units and cookery processes units. This will ensure a practicable and economic approach to their delivery.

The tasks within this unit can relate to the provision of food for a restaurant or bakery where candidates are involved in the planning and production of suitable dishes/recipes.

ASSESSMENT PROCEDURES

Outcome 1	Structured worksheet containing evidence of preparing for the task(s).
Outcome 2	Plan of work.
Outcomes 3 & 4	Practical observation checklist.

PROGRESSION NC module 5130206 Organisation of Practical Skills 4.

RECOGNITION Many SQA NC units are recognised for entry/recruitment purposes. For up-to-date information see the SQA guide 'Recognised and Recommended Groupings'.

REFERENCES

1. Guide to unit writing. (A018).
2. For a fuller discussion on assessment issues, please refer to SQA's Guide to Assessment. (B005).
3. Procedures for special needs statements are set out in SQA's guide 'Candidates with Special Needs'. (B006).
4. Information for centres on SQA's operating procedures is contained in SQA's Guide to Procedures. (F009).
5. For details of other SQA publications, please consult SQA's publications list. (X037).

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Appendix XII(i): Interview Questions (Chef & Experts)

1. *Name:* Willie McCurrach
2. *Company or body for whom you work:* Glasgow Metropolitan College
3. *Position:* *Head of Division for Food Studies* – I’m responsible for all the Professional Cookery programmes, and all the Food Science Programmes
4. *Involvement with the teaching of practical skills:*
.....
5. *When deciding what dishes and techniques to teach to beginners, what criteria do you use?*
.....
6. *If not mentioned, would you use any of the following criteria to distinguish between levels:*
 - Physical Criteria: Speed*
 - Accuracy*
 - Reliability*
 - Correct use of tools/equipment and/or correct body/hand position*
 - Degree of complexity*
 - Degree of autonomy*
 - Evidence of Underpinning Knowledge (Cognitive)*
 - Evidence of Affective aspects*
 - Evidence of Reflective Practice*
7. *Thinking of the criteria mentioned above, any suggestions as to how these could best be described or otherwise illustrated?*
.....
.....
8. *Given the suggestions above, what re the implications for teaching and assessment of practical skills?*
.....
.....
.....

Appendix XIII(ii): Interview Questions (RAD & ABRSM)

1. *Name:*
2. *Company or body for whom you work:*
3. *Position:*
4. *Involvement with the allocation of practical/technical skills to levels:*
5. *When deciding what techniques to teach to beginners, what criteria do you use?*
6. *If not mentioned, would you use any of the following criteria to distinguish between levels:*

Physical Criteria: Speed

Accuracy

Reliability

Correct body/hand position

Degree of complexity

Degree of autonomy

Evidence of Underpinning Knowledge (Cognitive)

Evidence of Affective aspects

Evidence of Reflective Practice

7. *Thinking of the criteria mentioned above, any suggestions as to how these could best be described or otherwise illustrated?*
8. *Given the suggestions above, what are the implications for teaching and assessment of practical/technical skills?*

Appendix XIII(iii): Interview Questions QCDA

1. *Name:*
2. *Company or body for whom you work:*
3. *Position:*
4. *Involvement with the allocation of practical/technical skills to levels:*
5. *When deciding what techniques to allocate to the lowest level, what criteria do you use?*
6. *If not mentioned, would you use any of the following criteria to distinguish between levels: As above, no criteria yet formally in use, so I asked which of these he would think appropriate to use:*

Physical Criteria: Speed:

Accuracy:

Reliability:

Correct body/hand position:

Degree of complexity:

Degree of autonomy:

Evidence of Underpinning Knowledge (Cognitive):

Evidence of Affective aspects:

Evidence of Reflective Practice:

7. *Thinking of the criteria mentioned above, any suggestions as to how these could best be described or otherwise illustrated?*
8. *Given the suggestions above, what are the implications for teaching and assessment of practical/technical skills?*

Appendix XIII(iv): Interview Questions

1. *Name:* Tommy Brunton

2. *Company or body for whom you work:* Glasgow Metropolitan College.....

3. *Position:* Curriculum Leader in Professional Cookery.....

4. *Involvement with the teaching of practical skills:* 75% of his timetable is teaching practical skills. Groups taught – Higher Professional Cookery (2nd year craft students) (L6) and also HNC (L7) and HND (L8) students

5. *When deciding what dishes and techniques to teach to beginners, what criteria do you use?* Based on the practical skills which are required in the kitchen. “Really what we are trying to do is establish these foundational skills, the building blocks”.

Me – and how do you decide what a foundational skill is? “Basically, based on experience, both of teaching and of working in professional kitchens, it’s the simple techniques of basic knife work, understanding of the cookery process, and really, that’s what we try and establish in the 1st year. If, after the first year, the student is fairly confident in manipulative skills, and has an understanding of the cookery processes, that’s a good foundation to build on in future courses. Obviously, the dishes then that we select, basically what we are trying to do is bring all these basic skills in. Years ago, what we tried to do was try to concentrate just on the basic skills individually, but it didn’t really make it a meaningful experience, for example, just to have a student slicing onions for a lesson, you didn’t end up with any end product at all. So the students couldn’t really relate to why they were doing that and what the outcome was going to be. So what we did was, we identified fairly simplistic dishes that would incorporate the basic skill the student was covering at that time, for example, a broth-type soup, which was a very simplistic dish, but it encompassed the basic skills. It then brought in the likes of cooking processes, simmering the soup, things like that.

Me – so, just to go back over what you said, because that’s very interesting, what you said was that it is possible to teach a skills individually (Tommy – yes) just take chopping veg. or whatever it is, but that wasn’t motivating for the students (Tommy – no) because they couldn’t see how that fitted in with anything else (Tommy – no) so what you did then, you identified, in technical terms, a dish that would have a few simple steps in a chain (Tommy – yes) that the students could do each step in turn (Tommy – yes) and that would require them to improve their manipulative skills but would also give them a better understanding of the processes involved (Tommy – yes). So you are actually working on both their practical skills and their understanding (Tommy – yes) OK, that’s great, thanks.

Now, if you were having to judge between a student who had just come through the door for the first time in the kitchen, and a student who you felt was ready to finish

that programme and move on to the next level, would you use any of these following criteria to judge between these 2 students

(6. If not mentioned, would you use any of the following criteria to distinguish between levels:)

Physical Criteria: Speed The speed isn't important. I would say it's more the process they're going through, so, if I can relate it to knife skills, I'd be looking at, does the student hold the knife properly, do they use the knife in the right manner, do they hold their fingers properly to prevent cutting themselves, because at the end of the day, what you find with some of the younger students are concerned about is the speed, and the safety goes out of the window, and you can imagine the results!

*Me: so you are saying that **speed** is important as a criteria but that it is not so important in the early stages (Tommy – yes) as **correct use and accuracy** (Tommy – yes) OK, so have already identified **correct use and accuracy** as being important (Tommy – yes) **Reliability** – the ability to produce the correct results time after time?*

Tommy – yes, we're looking that that because in the kitchen, there's very specifics, for example cuts of veg., so there's very specific measurements for example, Brunoise and Macedoine, they're both small dice, but there's specific measurement, recognised measurement within the kitchen, not to the extent of walking about with a ruler, but not too big or too small.

Me: OK, so the ability to do that again and again is important (Tommy – yes).

Me – you've already mentioned this to a certain extent, but we talked about, when you said about doing skills individually you'd use a series of skills to build up to something (Tommy – yes) presumably, as you progressed through various levels, you would expect the number of steps involved in producing a dish to be greater (Tommy – yes) they would be required to be greater? So, would they be more complex dishes at the end of L8 or L9?

Tommy – yes

Me – so, degree of complexity is something you'd look at?

Tommy – one of the progression routes we look at is we teach what is called the Organisation of Practical Skills; for example, if you look at OPS 2, it could have, for example, 12 process steps, as a student progresses through the courses they would end up, for example, at OPS 4 level, which could have something in the region of 24 processes, and really what we are trying to establish is this kind of idea that the students can multi-skill at the same time - they can be involved in a few processes at the same time. Because obviously, in a professional kitchen, you know, for example, if you put a chicken into the oven to roast for an hour and a half, you wouldn't be standing there watching it,

Me – yes, you'd be doing another 25 things while that was happening, and still have to remember to take the chicken out at the right time?

Tommy – yes. Initially, when the students come in, they can only do maybe 2 tasks at the same time, but as their skills levels develops, they can multi-skill, they could have 4 or 5 processes going on at the same time

Me – so, you would expect a student about to exit into the industry to be able to do more things at the same time (Tommy – yes), all accurately, reliably etc?

Tommy – yes.

Me – degree of autonomy – the ability to work on their own?

Tommy – yes, it's something we try and instil very early on, especially in the 1st year students, because a lot of the students come in, if they've had experience at school, they tend to be very much teacher-led. So, for example, the dishes are written up on the board, the recipes are written up on the board, and you follow the board. And again, my personal experience is that I've got students who come in and they cannot look up in an index in a book

Me – they're expecting it all to be provided?

Tommy – yes. Bit what I try and encourage to do is, say, right, that's the dish we're doing today, you find that in the book. I've got students at HNC level who cannot find a recipe in the Practical Cookery book. And again, working outside in a professional kitchen, a Head Chef's looking to get a Commis Chef to whom he can say – look, go to such and such a book...

Me – so, they've got to be able to find it?

Tommy – yes

Me, so that brings me to the next point I was going to ask you about, which is the evidence of underpinning knowledge – where they've got to know what they're doing, why they're doing it, got to be able to find it?

Tommy – yes.

Me – OK. What about what is called affective aspects, the ability for them to do something creative, different, exciting, you would expect a difference in that between a beginner and a...?

Tommy – yes. If, for example, you asked a student at 1st year level, what's their favourite soup, they'd say lentil, but by the end of second year they might have sort of expanded and be able to say something like minestrone. So, their concept of food has developed, because the majority of students coming in have a very shallow knowledge of food and they tend to eat the things that they like, but obviously, from a professional chefs point of view, it's important that they have the skill where they can assess food by taste not just purely by "I don't like that" so you're trying to expand on that.

Me – so what you're trying to do really, is get them to taste as if they were a chef, rather than their own personal taste

Tommy – yes. And obviously, initially they've got to establish their knowledge of food, but also, later on in the programme, what we're trying to do is enhance their creativity, their creative ability. For example, we'd say, right, today we're going to do a pasta dish, what we would want them to do is come up with a recipe for that pasta dish, because in their 1st year they'll have established their basic skill, for example, doing a macaroni cheese, they would know how to cook pasta properly, they would know how to make a sauce, they would know how to get the sauce to the right consistency, they would know how to finish it. So, from taking a very basic product, we'd expect them to be able to expand on that to do some more complex dish.

Me – OK. So you would say that, if I've got you right, that you are looking for creativity, but you can't look for it until such time as the basic skills and knowledge have been established.

Tommy – yes.

Me – and that they've built up the ability to deal with complex processes?

Tommy – yes. Getting back to the point we made at the start, it's getting the foundation right.

Me – OK. And the last criteria I'm going to ask you about is, would you expect more advanced students to be more reflective about what they've done than beginning students?

Tommy – as the students progress, if we took it from Intermediate 2 up to HND level, again based on the skills levels, L7 and L8 you would expect the students to analyse, you'd be expecting them to evaluate, the dishes they've produced. It's something we've actively...we've built this in over a period of time. The initial hurdle you've got with 1st year students is they don't want to taste anything. But, by the time the student is at HNC /HND level, you would expect them to have developed the ability to taste food, that's a good dish, that's a poor dish

Me – yes, So they'd evaluate it on things like taste, appearance, but they'd also say things like, you know, I should have cooked this for longer...?

Tommy – yes

Me – reflecting on the process, the product?

Tommy – yes.

Me – and presumably later on, to a certain extent, on their creative abilities, it would have been better if I'd put something in it...?

Tommy – yes. And obviously, one of the major things is the customer acceptability

Me – and that's kind of the threshold - if it's not customer acceptable, it's no good?

Tommy – yes

Me – but even if it's customer acceptable, it could still be improved?

Tommy – yes. And again, part of the students external examination for HNC level is that they've got to do kind of a critical analysis (in the HNC Graded Unit); they must do a dish evaluation but they must also do a fairly comprehensive critical analysis.

Me – and that would include the process as well as the product?

Tommy – yes.

Me – so they're judging themselves?

Tommy – yes, self-analysing

Me – OK. Now, 2 more questions, we're nearly at the end. Now, if you were approached by the SQA and they said, right, we're doing away with all our Units, and we want you to write a syllabus describing what professional cooks should learn from the moment they come through the door to the moment they exit, how would you best describe what students have to do? Would you be able to describe it, differentiating between beginning students and end students, or is there any other means that you would use to illustrate what students are meant to do?

Tommy – well, you would be able to describe it, you could do it in words, for example, it's one that I use quite often, is say you took soups as dishes, and if you looked at a first year soup would be for example lentil soup, which is a fairly basic soup, 2nd year a level of soup might be a soup that contains a specific cut of vegetables, for example, minestrone. Once you progress into a 3rd year level of soup, you might be looking at things like a consommé, or a bisque, or something like that, so you can actually see, within the dishes, you can actually identify the complexity.

Me – so you're actually describing the levels by the end product?

Tommy – yes.

Me – knowing that those end products will have within them different levels, of skill, complexity etc?

Tommy – yes

Me – OK. And would you think that, just by listing those dishes, that would be enough to describe, or would there be other things, like would you want to illustrate the processes in some way?

Tommy – I would say in the majority of cases it should be enough to actually specify the dishes. Where you get into problems there is, if you looked at possibly other sectors, that were offering this course and this qualification, for example maybe in the schools sector, it's maybe a wee bit clouded.

Me – Right, so they could arrive at the end product that's described in the level, but that product might not be as good because the processes or whatever have not been correctly followed?

Tommy – yes.

Me – So, to a certain extent, the only way you could describe that would be to what? Video it?

Tommy – you could video, but, I mean, it would be a lengthy process to do that.

Me – But suppose you're saying that there's all these colleges and schools in Scotland and they're all going to do these same dishes, if you had to demonstrate that, you could do it, from beginning to end, that would be a way of showing that?

Tommy – yes.

Me – Ok, and last thing, and I think we've talked about this to a certain extent, you've explained to me about the implications for teaching, and obviously I've observed you teaching as well, but coming to assessment, then, of practical skills, you've got the process, you've got the product, you've got their self-evaluation, what's the best way of assessing all those different aspects?

Tommy – I couldnae really give one example, but initially, my style of teaching is, I get the students to assess their own dishes, even if it was at 1st year level. I would get them to firstly, assess their own dish, the product, first. They would then assess their fellow students' products, so really what you're doing there is instilling this idea of assessing the food. And what I would expect to see developing, is initially the students would say, "aye, that tastes good", or "no, I don't like that". And really what we're trying to do is build that up, say "you didn't like it – why didn't you like it?" "It didn't taste good". "Why didn't it taste good?" "It didn't taste good because it was tasteless, it wasn't seasoned, it was lumpy, whatever..." so these are the things we're trying to develop. The other aspect that I get them to do in the restaurant situation is look at customer feedback

Me – OK. And do you get enough detailed customer feedback to do that?

Tommy – depending on the customers. We've some customers who, I would say, are educated as far as food is concerned; other customers, possibly not. And also, the members of staff as well, so we try and develop this idea that we're looking for a uniform product, and get other members of staff to come in and assess the dishes as well.

Me – so you'd assess each others?

Tommy – yes

Me – in an informal way?

Tommy – yes. Sharing of best practice.

Me – does that work?

Tommy – yes. Initially, it doesn't, because the doors are always closed, people don't like identifying best practice with colleagues, but it's fairly relaxed in here now compared with what it used to be, so identification of best practice works.

Me – so that would be a good tip?

Tommy – yes.

Me- OK, fine, one last thing, just to make sure I understand this, by judging the product, to a certain extent you can look at the product and judge the process, then. So if you're tasting something and say, the flour not been cooked out, so you can say "what's this taste like", and they say "floury" and you say so "what's caused that", and take it back to process?

Tommy – yes.

Me – or if you're looking at a soup, and it's got Macedoine in it, and it's too big, you can say...?

Tommy – yes.

Me – so, to a certain extent, perhaps not entirely, but to a certain extent, you can judge process by product?

Tommy – yes.

Me – OK. So, presumably, the more complex things get, the more possible that's going to be, because you couldn't arrive at the right result without doing things right?

Tommy – that's right.

Accuracy

Reliability

Correct use of tools/equipment and/or correct body/hand position

Degree of complexity

Degree of autonomy

Evidence of Underpinning Knowledge (Cognitive)

Evidence of Affective aspects

Evidence of Reflective Practice

7. Thinking of the criteria mentioned above, any suggestions as to how these could best be described or otherwise illustrated?

.....
.....
.....

8. Given the suggestions above, what re the implications for teaching and assessment of practical skills?

.....
.....
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Appendix XIII(v): Interview Questions

1. *Name:* Willie McCurrach

2. *Company or body for whom you work:* Glasgow Metropolitan College

3. *Position:* *Head of Division for Food Studies* – I'm responsible for all the Professional Cookery programmes, and all the Food Science Programmes

4. *Involvement with the teaching of practical skills:* At the moment, I teach a practical restaurant class which is a 5 hour practical, and we serve 40 covers a day in Scholar's restaurant.

Me: and you teach the kitchen side of that?

Willie – yes, it's an HNC/D Professional Cookery class – students will be in 3rd year at that point.

Me: and that would be at what SCQF level?

Willie – 7/8

Me; - are they in together/

Willie – they do HNC the first year, then they come back the following year and do the HND

Me – so do you have them in the kitchen together?

Willie – No

Me - So, some level 7 classes and some level 8 classes?

Willie – yes.

5. *When deciding what dishes and techniques to teach to beginners, what criteria do you use?* We wouldn't have anybody in that situation (in this class). The students in the HNC level 7 will have come in either with industrial experience, or they will have completed the Intermediate 2 and Higher Professional Cookery, moving on to HNC.

Me: so you will know what they're able to do

Willie – yes. And there are also a lot of students who are feeding through the programmes

Me – so you know them already?

Willie – yes.

Me - So, if you have level 6, level 7 and level 8 students in 3 different classes, how do you decide what you're going to do with L7 students and what you're going to do with L8 students?

Willie – suppose we're just saying it's level 7, we'll have all the HNCs together, we might have a couple of L8s that are just doing individual units, and they would also be in my class, they would be doing the sweets and desserts

Me – so they would be doing something different?

Willie – yes

Me – Ok, so how do you decide what you're doing with your L7 students?

Willie – we operate a system within the college here where we have a standard menu for the month – 4 weeks – and the students work at a different corner each week. We

keep rotating them round. The restaurant is serviced by, in the first term, 3 days a week, serviced by HNC L7s, and 2 days a week with the Higher Professional Cookery students (L6). So, for example, say that one of the dishes on the menu was a Supreme of Chicken, then the Higher Professional Cookery students will just have trimmed up the knuckle on the Supreme, but when I get the students I will get them to de-sinew it, envelope it and put it back inside the Supreme of Chicken, so I'm taking the skill to a different level.

Me- yes, and what made you decide to do that with those students?

Willie: I'm a professional. As a student, on the old-fashioned 706/3 qualification, it was progressed in exactly the same way. If you were a 1s yea student, you just trimmed the Supreme; if you were a 2nd year student, you would trim it a bit further; if you were a 3rd year student

Me – right – so would it be fair to say, then, that the criteria you are using are based on your own professional experience and you own previous qualifications?

Willie – yes.

Me – so, when you were devising these standard menus, that was the kind of background that you brought to it?

Willie – Yes. So, the dishes are all dishes that we can extend the level of skill required.

Me – yes, they've got headroom, as the educators would say. They can do more with it.

Willie – yes. For example, just say we're making pasta, a 2nd year student might just do noodles. I will do a ravioli, or I'll do a tortellini, using the hand skills as well as the stuffing it, and more complication in the cookery process,

Me – OK. And how would you choose students who were to do the more complicated skills, just based on what you're observing, the ones that are capable of doing it?

Willie – each of the ones in the L7 class, they rotate round the corners, so they really have to do that level

Me – everything?

Willie – yes

Me, OK, fine.

Willie – at the end of the Unit, they will have a portfolio of dishes that they have created and will have photographic evidence to support which they will have completed over the 30 weeks in the kitchen.

Me – and when you're looking at that portfolio, I presume you start that fairly early on in the Unit, so that gradually they're building up a portfolio

Willie – yes

Me – so, by the time they're looking at the finished work, if I put in front of you a whole load of pictures of finished work of students that you haven't observed making it, would you be able to tell somebody that was at the start of the programme as opposed to the end?

Willie – you certainly should be able to do that

Me – yes, and what would you base that judgement on?

Willie – again, my experience. For example, at the beginning of the programme, the sauces might not have the consistency, the clarity that I'm looking for,

Me –OK, so one of the things your looking for is the accuracy, in fact, of what they've made, exactly to specifications?

Willie – yes

Me – so, its about the accuracy of what they've made, that's one of the ones that you'd use. Anything else that you might use to distinguish between them appearance, or... ?

Willie – yes, appearance of the finished product, but if it wasn't just the photographs you were looking at, if you were doing an observation of the students, then it's their competence, their ability to be able to do the dishes themselves, without additional support.

Me - OK, lets move on to that then, So, the degree of autonomy is important then, their ability to do things without you having to come and tell them what to do?

Willie – yes.

Me – OK

Willie – last year, when we went through a college review with HMI, they sent a reviewer from England up, they couldn't get anybody in Scotland at the time, and they sent an equivalent HMI from England, and he observed upstairs in the kitchens from our pre-vocationals right through to Higher Professional Cookery, and he came down to Scholar's kitchen when I was working on that particular Wednesday morning, he came down to the kitchen and he couldn't believe how the students were just working away on their own completely autonomously, just doing the food. And, at the end of that, he could see that the systems that we're operating here had progressed through, so the students were able to run the restaurant on their own, without me or despite me.

Me. Yes, So when the students first come into college, albeit not on that programme that we're talking about, like I observed Tommy in his class telling them what to do all the time, demonstrating, going round helping them and whatever, but by the time they're getting into this programme you're expecting them to be able to work on their own

Willie – yes.

Me – so the degree of independent working is one of the criteria that you're using?

Willie – yes.

Me – OK.

Willie – also, when we're in Scholar's part of what the learning experience is for the student, they're doing a supervisory Unit as well, so 5 students will be on assessment on that particular day, managing the corner that they're on, and there will also be 1 student managing the overall restaurant menu that day

Me, so its not just their ability to work on their own, its also their ability to monitor and supervise other people's work?

Willie – yes. You're also looking for the student to demonstrate flair and imagination to the dish. I might give them, I might say I've got a Supreme of Chicken, I've got some leeks, some mushrooms, what can you create out of it? On our menus, that we give the student, for example, the dessert will be just 'a dessert using fruit', 'a desert using chocolate'

Me – so its like a shell menu, in fact, and its up to them to decide exactly what to do?

Willie – yes

Me – so, one of the thongs you're testing, in terms of sort of education theory, is their affective aspects, in other words, their ability to use their skills to produce something new, different, creative – yes?

Willie – yes. And, there will always be the weaker student, that you're required to give more support, to maybe suggest 2 or 3 things, that'll come to you, and say, lets

just say for arguments sake, I want to do an apple and honey tart, and I'll say, well, did you not do that last week, or somebody in the corner did that last week, what other foods have we got through there, what's in season today, so, trying to nurture them on in that way as well.

Me – yes, But those students are working at the same level, it's just that they probably wouldn't achieve so well above the minimum

Willie – yes

Me – OK, fine. So, I'm going to give you some other criteria that you might judge, say, a student at the beginning of the Unit against a student at the end of a Unit. It doesn't matter which Unit you choose, just think of one. So, would you expect students at the end of the Unit to be able to do things more quickly than students at the beginning?

Willie – yes

Me – so speed is one of the criteria?

Willie – yes.

Me – we've already talked about accuracy, the ability to do something exactly to requirements, so that would be something as well

Willie – yes. The students would need to be competent at the skill

Me – yes. But at the beginning you might expect there to be some...you said, the sauce might not be as you would like it, it might be acceptable, but you would still expect that to improve?

Willie – yes.

Me – OK. What about reliability, that is the ability to produce something that is the same time and time and time again, do you expect that to increase through a Unit?

Willie – yes, I would expect that to increase, but at the same time, on the menu that we're actually using at Scholars, we're looking for the student to always come up with new ideas each week

Me – so at that stage, reliability isn't so important, but at an earlier stage ...?

Willie – reliability is very important for the consistency of skills - chopping the onions, preparing the vegetables, whatever they're actually doing, that's important for that aspect of it, but we're looking for creativity always

Me – but at lower levels, you might just be looking at reliability, the ability to keep producing it?

Willie – yes.

Me – so at higher levels, you're beyond this and looking at creativity?

Willie – yes.

Me – OK. Once again, thinking about students at the beginning of the Unit and at the end of a Unit, correct use of tools and equipment, correct hand/ body position if you were thinking about beginners, that would be something you were telling them about all the time?

Willie – yes.

Me – but I presume by the time they become more advanced, you expect that to be ingrained?

Willie – yes, you expect that. If there was a fish to be filleted, you would expect the student automatically to go get the board, put the cloth underneath it so its not going to slip and then appropriately fillet the fish, and then also know what to do with the bones

Me – disposing of waste correctly?

Willie - yes. And portioning that fish correctly.

Me – yes. So, there would be a complex range of things that you'd be looking at in the actions. So, if the descriptor said 'fillet a fish', there would be a whole load of break-down things into that, wouldn't there?

Willie – yes.

Me – so, complexity is also an issue? Presumably, at the beginning of a programme, I'm thinking now of a several year programme, you wouldn't give them a task that had several complex stages?

Willie – no

Me – you'd give them a task that was complete from beginning to end – do this, (Willie – yes) and then gradually you'd add those together?

Willie – in a normal classroom situation here, I would demonstrate what I want them to produce to a level, and then send the class off to do, to get to that level, and then bring them back to do the next stage, and the next stage, whereas at L7, I'm expecting them to be able to do that stage from start to finish

Me – yes. So, when you give them a task, you expect them to already know, and to be able to perform, all the steps in that task

Willie – yes.

Me – whereas, at the beginning, you've had to break it down

Willie – yes

Me – so they would know the steps in a later level

Willie – there'll still be things at L7 they won't have produced, won't have made, for example, when it comes to Christmas, we're into turkeys,

Me – they won't have used a turkey before?

Willie – no. So, one of the lessons you'd be doing in Scholars is all the boning of the turkey leg. They will have processed it as a chicken, so technically the bone structure etc should be exactly the same,

Me – so, they know it in theory but they haven't actually done it in practice?

Willie – yes.

Me – that brings me to the next step, which is, if you're teaching Professional Cookery, a lot of what you're doing with them, you're going to judge it on the process and the end product

Willie – yes

Me – so, how would, if I asked you in SVQ speak to say, how would you find the evidence of their underpinning knowledge, how would you show evidence of that?

Willie – for underpinning knowledge purposes, you'd question the students as they were going along – why did you do that? One of the criteria that I've always used over the years I've been here - can I sell that product? Is it an edible product?

Me – yes. And so, you're presuming that if they produce an edible product, to the right specifications, then they must have not only the skills, but also the knowledge of why they're doing it?

Willie – yes.

Me – so, underpinning knowledge is really underpinning - it must be there before they can produce...

Willie – yes.

Me – one last question about criteria – we're nearly at the end. Do you expect at any point the students to reflect on what they've done, what they've produced, evaluate their own work, their own skills,

Willie – a lot of the portfolios that we actually have, the students produce as evidence to the external verifier coming, we actually get them to evaluate the dishes that they've produced. At the end of a practical class, I would bring them all round and we'd talk about the dishes, and I would get them to talk about their own particular dish, so they're reflecting on what they have produced

Me – OK. So, that's reflecting on the product, what about the process? Do you ever say to them, you could have done that faster,...

Willie – that would be part of that same reflection

Me – 2 more questions and then we're done. So, we've discussed the criteria, and funnily enough, all the ones I'd previously identified are ones you've brought up – are there any others that you'd use?

Willie – I'm comfortable with what we've discussed.

Me – if you were asked to talk to somebody who knew nothing whatsoever about kitchen practice, how would you describe a competent student who is just about to graduate from the college, going into a professional job, what they can do, as opposed to somebody who's just come in to the college, how would you do that?

Willie – I would do it by saying, if I give that student a box of ingredients, they'd be able to produce a very sellable dish

Me – OK, so they'd have the skills and the knowledge and the affective aspects in order to be able to do that

Willie – yes. Whereas, the novice wouldn't. I would expect that individual to understand all of the processes that they would do to produce a dish, the new student wouldn't.

Me – that's fine. If you were employed by SQA, let's say SQA were getting rid of all these level descriptors, they'd decided they don't work, we'd like you to write a syllabus, an old-fashioned syllabus that takes the students right through from the first moment they enter a kitchen to the moment they exit as a professional chef, how would you describe what new students would be able to do and what exiting professional students would be able to do? Would you try and describe it in words, try and illustrate it with pictures, video, how would you try and differentiate to somebody?

Willie – the easiest would be a video, because you would see a student not very confident at chopping, shredding etc, whereas you would see the competent student being able to effectively produce the goods. It's a simple thing like frying an egg – its one of the most difficult things a chef can do, to produce a perfectly fried egg

Me – so are you telling me that you feel words, to a certain extent, are inadequate for describing the differentiation between different levels of practical skills?

Willie – words are required, but they're not enough. I could say, for example, that I wanted a poached Supreme of Chicken at a basic level, but if I wanted a poached Supreme of Chicken at an HNC level, then I would expect it to be properly prepared, stuffed if need be, and presented in a much, much finer way

Me – so there are words you could use, it would be more accurately prepared, there would be more creativity ...

Willie – yes

Me – so there are words attached to differentiating?

Willie – yes. You could also name dishes

Me – yes

Willie – for example, if I want a mousseline of something, then I know exactly what that means, because of the skills that I have, but I would expect the students to be able to produce a mousseline at the higher level

Me – so the dishes they are asked to prepare would, in fact, be appropriate to a level. Based on your experience, and, as you said before, your progression through your qualifications, you know what dish would be appropriate for a particular level, and that's what you expect them to produce

Willie – yes.

Me, so if you were doing set menus for beginners, that would have a different set of dishes in it?

Willie – yes

Me – OK. Given what we've talked about, I think we're clear about the teaching, I think we've already covered that, assessing practical skills then, do you see any point whatsoever in doing written work for practical skills – would you do it entirely by practical or do you think there's a use for... ?

Willie – there's a use for both. We do Graded Units which are a part of the HND - superb quality Units – students have to be able to plan in advance, organise, evaluate what they've produced, get the students to understand the relevance of the core skill, and they will always, more and more, be required to use a computer. At the college here, we have Advisory Boards, and the Chef from the Hilton commented how he cannot get his staff to use the computer in the kitchen, for food ordering purposes, drawing information down...

Me – such as the standard recipes and quantities, and all that stuff on there?

Willie – yes. We talked at the Advisory Board about getting the students to turn up for assessments- it's difficult these days. They'll turn up for the practical assessment, but not the written assessment necessarily, so we said this year that if the students did not hand the paperwork in to support the practical, then we would not allow them to carry on in the practical class, so there'll be a punishment, if you like, so they'll have to do it, and Chef at the Hilton said if you did that when I was a student, (he was a student here at the college 20 years ago), then I'd have been off the course, because I did not understand the relevance of the theory side.

Me – yes. But now he does?

Willie – yes.

6. If not mentioned, would you use any of the following criteria to distinguish between levels:

Physical Criteria: Speed

Accuracy

Reliability

Correct use of tools/equipment and/or correct body/hand position

Degree of complexity

Degree of autonomy

Evidence of Underpinning Knowledge (Cognitive)

Evidence of Affective aspects

Evidence of Reflective Practice

7. *Thinking of the criteria mentioned above, any suggestions as to how these could best be described or otherwise illustrated?*

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8. *Given the suggestions above, what re the implications for teaching and assessment of practical skills?*

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Appendix XIII(vi): Interview Questions (ABRSM)

1. *Name:* Dr Nigel Scaife

2. *Company or body for whom you work:* ABRSM

3. *Position:* Syllabus Director

4. *Involvement with the allocation of practical/technical skills to levels:* Expert Group Member

5. *When deciding what techniques to teach to beginners, what criteria do you use?*

Me: so when you're talking to a body like the QCDA, or even when you're revising the syllabus in house, how do you decide what level of skill you're going to put on Grade I or Grade III or Grade VIII?

Nigel: it's a big question there's no easy answer

Me: I thought that might be the case! Give me the difficult answer.

Nigel: OK. Well, I suppose, in a nutshell, we have to say it's an art and not a science, when we are selecting repertoire; and within the repertoire, is embedded a certain level of dexterity; of physical ability to manipulate, whether its fingers, or lips, or tongue or whatever it might be. And, I lot of the work we do, well, it's very pragmatic, really. It's based on our experience of teaching and learning, and also the many decades of precedent we have. So, when we say this is a Grade I piano piece, for example, we're saying we think, on average, a student can approach this piece after 18 months to 2 years, and it matches other Grade I piano pieces that we've set in the past.

Me: Yes, because I've noticed, in fact, if you look over the years, various pieces have come up, say a Grade IV piece, in the 1920s/30s has become a Grade IV piece in the 60s and now a Grade IV piece in the 90s...?

Nigel: Yes

Me: So, a lot of it is based on historical precedent?

Nigel: Yes

Me: And I'm sure the RAD would say exactly the same thing?

Nigel: Yes. Because when you consider that every year, we've had well over 600,000 exams, every year, we've got a pretty good idea, because every single examiner will have heard hundreds of Grade I candidates, so we know what is achievable and what isn't achievable.

Me: So, do you get any feedback? Do they ever say something like, most candidates found this difficult and you might want to review that, or would you not?

Nigel: It rarely happens that anything is significantly out of line in that regard, because, given the level of attention to detail, and the experience we bring to the process. Having said that, we definitely look at statistics about which pieces were popular pieces, and what the average marks were, and that sort of thing. But, analysing that is a complex issue as maybe so many people didn't buy it because it's an expensive book... We need to look at things like, the instruments, so, for example, your typical harp candidate, is more likely to come from a more affluent background than your recorder player, they could come from any kind of background, it's simply that in order to afford a harp, and be able to afford the transport to lug a harp around,

it puts you in a socio-economic background, and therefore, there's certain expectation there, and, you know, all these things come into play.

Me: Yes, OK

Nigel: there's a danger of being too simplistic about it.

6. If not mentioned, would you use any of the following criteria to distinguish between levels:

Me: Yes. So, if we took, say, the piano syllabus for an example, if you look through the various grades there seems to be various points at which things happen, so, like, for example, crossing hands always seems to appear at the same Grade, is that something that's a conscious thought, or ...?

Nigel: Not necessarily, one of the reasons - it's quite a good illustration, actually, the crossing hands one, it's one of the reasons why we don't have fixed criteria of that nature, to do with digital dexterity, because there are so many variable factors. For example, you might have a Grade I hand-crossing example, but, if it was on the very last note of the piece, and you have plenty of time to reach it, then that would be fine. Whereas if you're playing something like, I don't know, Bach's Goldberg variations or something, where there's constant very difficult hand-crossing, then that's got to be taken into account, hasn't it? The difficulty of the texture, the speed at which it has to happen, and so on.

Me: Yes. So there's a whole load of criteria, is what you're saying?

Nigel: Exactly, yes. And you can't pin them down, there's no sort of hard and fast rule,

because as soon as you do, you'll break them, that's the thing. It's a bit like musical criteria, for example, the up-and-coming next piano syllabus at Grade I, has a piece in 5 flats, and you think, crikey, they're never going to come across 5 flats at Grade I, that's a really difficult key signature, but the fact is, that it is all on the black notes and it's very easy to read, in fact it's very easy to learn by rote, actually, without even looking at the dots, and it's ...Camptown Races, so it's all on the black notes.

Me: Yes.

Nigel: It's a lovely little arrangement for Grade 1. If you said, ah, we're only going to have key signatures of up to 1 flat or 1 sharp, you would have to rule that piece out, and that would be a great shame, because it's a fantastic little learning piece.

Me: Yes. And how do you decide what pieces to set; is there a sort of committee that discusses it, or...how does it work?

Nigel: Well, we have some selectors, who work over quite an extended period of time. Normally there are 2 or 3 of them, you know, it depends which syllabus, but usually, at least one of the selectors is an examiner, so they make recommendations at each Grade, and then the lists go through a moderation process and we look at things like the balance and in terms of the musical quality and the technical things, as you're saying, so if we're talking about Grade I, if we're talking about Piano, which seems the easiest one to talk about I suppose in many ways, then we'll have some pieces that will not go out of 5 finger position because we need to accommodate candidates with small hands. We wouldn't necessarily rule out a piece which had to use pedal, because we might have an adult student, and we have to recognise that candidates can be from 4 to 104, potentially...

Me: Yes, so you have a range of pieces, so that candidates can pick the piece...?

Nigel: Exactly. Yes. And so, the moderation process is quite thorough, and so there'll be somebody selecting the best variety of pieces, but we also have to bear in mind, you know, things like the range of publishers that are involved, so that we don't upset a certain publisher, so that they feel we're abusing our position, because we operate as a charity, you see, we are a charity, and we have to be quite even-handed, we can't favour Boosey & Hawkes over and above Faber, or Universal Edition or whoever it is, because if a piece is listed on the syllabus, they will sell many more copies.

Me: Of course.

Nigel: Over a couple of years

Me: Yes, that must be a very tricky process.

Nigel: So there are many different factors.

Physical Criteria: Speed

Accuracy

Me: Yes. Thinking about scales now, on the piano syllabus, obviously the scale become longer, different motions, more keys, different variations, harmonic and melodic and all that kind of thing, but do any of the things like, speed and accuracy, are they some of the things you're looking at?

Nigel: Yes.

Me: Do you expect them to get faster?

Nigel: Absolutely. We do set some recommended minimum tempos, published in These Music Exams, to give teachers and learners kind of steer as to what to expect, but they are only minimum speeds. So, again, it's not all about the speed, it's about the evenness of performance as well, and it can be often that people try to play scales too fast and they're uneven and they sound messy, and if they were playing at a slightly slower tempo there would be more evenness, and on a string instrument, for example, the tone aspects are critical, it's not all about digital dexterity, but it's about other aspects, which, you know, do relate to psychomotor skills, you know, creating a nice sound

Me: That's really interesting, because experts from other areas have said, that speed is a criteria but that it tends to come later, and they're much more concerned about getting the technique right, in your case sounding good, or looking good, or whatever, and speed builds up, you know, comes later on

Nigel: Yes, it does, and for me, a classic example, I was listening to one of these radio programmes where they make comparisons between different performances of the same piece, you know, and they were playing, I think it was Chopin's Black Key Study, do you know that one, it's one of the Opus 10 Piano Studies, comparing different performances by different pianists, and the one that sounded the fastest was Horowitz, I think, and yet, when they took the actual metronome speed, he was actually one of the slowest, but it sounded the fastest because he was the most even, and it sounded the most virtuosic because of the evenness of playing, giving an aural sense that it was going very fast, when in fact it was slower than some of the faster ones which were more uneven, so some of the faster ones didn't sound so virtuosic

Me: Yes, because it was so smooth, it sounded...

Nigel: Yes.

Reliability (not asked about this as ABRSM is purely an examining body – they only hear each candidate once at the assessment)

Correct body/hand position

Me: Yes, very interesting. OK, things like the correct hand position, let's stick to Piano, obviously this will affect other things, is that something the examiner looks at?

Nigel: No. Unless it's seriously interfering with the musical outcomes, we don't comment specifically on technical aspects of performance, we are purely assessing musical outcomes, but if we notice that there is some physical aspect of the performance that seems to be impeding the ability to communicate the music, then we do have the ability to write about that in the additional comments section, at the bottom, but there's a great danger in commenting on physical attributes when you as an examiner have never met this candidate before, and it could be that they have very specific issues about their embouchure, if they're a wind player, or something about their hands, so, and again, if you look at the great pianists, you've got the classic case of Glenn Gould, who sat very low at the piano, and I think it was Richter, who sat very high, so there's a sort of debate about the rules of piano playing, so there is no totally right or wrong way of doing it, we could look at things like bow hold, you know, for strings, string teachers can discuss these things endlessly...

Me: OK, that's also very interesting, then. So what you're saying is, your examiners are looking at, or listening to, the result...rather than how it...

Nigel: The musical outcomes, yes

Me: Not necessarily how it gets there?

Nigel: Exactly

Degree of complexity (covered in other answers)

Degree of autonomy (not relevant to individual performance)

Evidence of Underpinning Knowledge (Cognitive)

Me: OK, fine, that's also very important. When people are playing, and I suppose particularly in higher Grades, I know you examine Theory separately, but I presume that you're also looking higher up the Grades for things like style, you know, getting into the idiom of the composer, that's something you would ...e.g. you would look for rubato in Chopin, but not in Bach or whatever...?

Nigel: Exactly. Yes, that's very important, and you will notice if you look at the criteria, again, they're in These Music Exams, so when you get to the higher Grades, the criteria change to take that aspect into account. So, the criteria for Distinction, no, let's take Merit, which is more interesting really, if you've got Merit at Grades I-V, the little telegraphic points for that are "attention to dynamics, phrasing, evidence of tonal awareness, control, suitable sustained tempo, awareness of the character of the piece, good sense of rhythm," but when you get to the higher Grades things like "awareness of style, shown by use of good dynamic range", and Distinction would be

things like "sensitive use of tonal qualities and rubato where appropriate, particularly authoritative playing, showing a high level of technical assurance". You wouldn't say "authoritative playing" at, say, Grade I, you wouldn't have the nature of style at Grade I, just right notes, right time, fundamentally, you know, where that is just not enough

at the higher Grades

Me: So, you are, to a certain extent, assessing the candidate's knowledge about the music, to a certain extent, as evidenced by their playing?

Nigel: Yes. And sometimes, you know, you have a Grade VIII candidate who might come in and have very little sense of the idea of the music

Me: So, you could have the technique, but not the idea of the music?

Nigel: Exactly, and that certainly will affect the assessment.

Evidence of Affective aspects

Me: Yes. And lastly, I think for what educationalists call the affective aspects, the ability to communicate, the ability to give the light and shade, the character of the piece, this is obviously something that you're marking on as well?

Nigel: It is; again, a very difficult area to pin down, because a lot of it is implicit with musical understanding, and there's a lot of knowing about music that cannot be verbalised.

Me: That is exactly the point about my thesis, I suppose.

Nigel: Yes. A good person - hold on a second, I'll just get you...a person who gave an interesting presentation about some of these issues, is a chap called John Finney, John Finney is somebody who talks about those aspects of music.

Me: Do you know where he works?

Nigel: Yes, I can find that out for you, I'm sure it will tell you at the end of the article...I've got an email address for you

Me: OK - he's at Cambridge University, maybe, then..

Nigel: Yes, that's right, I think he leads their teacher training

Evidence of Reflective Practice: Not asked

7. Thinking of the criteria mentioned above, and your suggestions as to how these could best be described or otherwise illustrated?

Me: Thank you very much. OK, that's fine. And the ability to the difficulty in expressing this, it sounds strange talking about music like this, but its tacit knowledge, really, isn't it?

Nigel: Exactly

Me: You can't really describe it. The problem is, and this is what brings us to the QCDA, when you're talking to people whose job it is to allocate various qualifications across various levels, the cognitive people, the history people or whatever, they can talk about, yes, we do this at this level, no problem, when we come to things that can't be verbalised so well, whatever that may be, then we're at a disadvantage to a certain extent because we cannot express to them the difference between, you know, a technique at Grade III or a technique at Grade V, in a way that they can then allocate to a level. Do you think that's a problem?

Nigel: I hope it's not a problem, because we're trying to do this in terms of getting qualifications accredited and so on, we are accredited, of course, on the NQF

Me: Exactly. And how did that go, I don't mean in the sense of how difficult was it, what kinds of conversations did they have with you about allocating to levels?

Nigel: In the early days, quite deep and detailed ones, because of Tony Knight working at QCA, he was a musician himself, which of course makes the difference, because what we're dealing with here is a community of practice, effectively, where you've got 650 examiners who work for the ABRSM, examining in 96 countries throughout the world, and the vast majority of them, if not all of them, I don't know actually, would have gone through the system themselves, and therefore there is an understanding...and in the old days actually ABRSM operated without criteria, because there was an understanding of what a Distinction is, and it is something that, you know when you hear it you can smell it almost, it's a communicative musical experience, and as musicians, we understand that, but it is, as you say, a difficult thing to point, and I think the best way to do it is just to give exemplars, really. For example, when we were looking at allocating UCAS points to the Grades, I was part of the Expert group that was looking at that, and we made a comparison there between expectations among different Awarding Bodies, but also between GCSE and A level, and the Grades and that was all factored in.

Me: Right, that's very interesting then. You basically looked at your qualifications as they existed, and tried to map them onto something that was expecting the same level from the candidate

Nigel: Yes. There was a mapping exercise undertaken by the Expert group, because you can't just pluck a number out of thin air, saying that so many UCAS points is a Grade VII Distinction, or something, there has to be some rationale, there has to be some thinking about how that relates to a music qualification in a different area.

Me: Yes, OK. And, you didn't have difficulty, then convincing them, that the technical qualities in Grade VIII were equivalent to something that might be more cognitive?

Nigel: No, I don't think so, not thus far.

Me: Good.

Nigel: We have Unit descriptions, and this sort of thing, which are fairly generic, and they have to be by their nature, but I would think even, probably, the cognitive folk, kind of, they have to be pretty generic when they're talking about the levels themselves. So, as you say, they're talking maybe at the lower levels about describing something and at the higher levels about analysing it and so on, I don't think there's much difference really. If you look at our Diplomas, for example, there at the NQF levels of 4, 6 & 7 I think, so they're Higher Education basically, they have mapped quite easily into the generic HE levels, and with the Diplomas, you're dealing with some written work as well as some performance work, so ..

8. Given the suggestions above, what are the implications for teaching and assessment of practical/technical skills?

Me: Yes, that's usually not a problem, in Higher Education, music degrees and so on, it's usually not a problem, it's when you're getting onto things which are only assessed by performance, I don't necessarily mean just a performance, I mean like the performance of a skill of some kind, whether it's a nurse giving an injection, or

whether it's you child taking piano, or whatever it is, that's where some bodies seem to have difficulty in differentiating between a Grade VII or a Grade VIII, or a 1st year nurse and a 3rd year nurse, they have difficulty in deciding what is the difference in that performance, or the difficulty or the complexity or whatever it might be, and that's the issue that I'm really looking at

Nigel: Yes, I think in music, I don't know if it's an advantage or a disadvantage, but at least we have repertoire, but of course, it's not all about the repertoire, because, if you're going to play Mozart like Alfred Brendel, then you need to be, you know, a much more advanced musician than you need to be to simply play the notes.

Me: Yes, obviously the technique is only half the story

Nigel: Yes, the technique is the minimum stage really, it's what you build on top of that, so when you choose a piece of repertoire, you can say, well, it can't be any lower than Grade IV, because you need at least Grade IV piano skills to be able to play this piece, but it might require a much more musical maturity to actually play it successfully. That can sometimes be a problem for us in repertoire selection, when we're saying, yes, it's all very well, the notes are easy, but to play this well you actually have to be quite an advanced musician, is the musicianship appropriate to the level

Me: Yes. Now, you see, that's very interesting, because chefs, the expert chefs that I've been speaking to, said more or less the same thing, that they couldn't describe in words what they wanted people to do, but they could tell you dishes they could do

Nigel: Yes, dishes are their repertoire

Me: Exactly so. So that's a very similar approach coming from 2 quite different areas

Nigel: Yes. It would be different in medicine, I guess it would be a bit more objective in medicine, you know, you've either stitched that up, or made that, and you've either done it well or you haven't

Me: yes, which is more about grading I suppose, to a certain extent that's true, and they tend to do it on the complexity of the skills, so giving a subcutaneous injection is simpler than giving an intramuscular injection for example, so you do that one first, and when you feel confident about that then you move on, so they tend to do it like that, rather than by any other means.

So, that's us, thank you very much

Appendix XIII(vii): Interview Questions: RAD

1. *Name:* Louise Murray, ARAD

2. *Company or body for whom you work:* Principal of own Dance School which teaches all RAD Grades from Pre-Primary through to Advanced. Registered RAD teacher – been teaching for 33 years. Member of the Board of Trustees for RAD. Juts completed 6 years as Chair of the RAD Scottish Advisory Committee.

3. *Position:* As above.

4. *Involvement with the allocation of practical/technical skills to levels:* Two areas of involvement. Runs SQA Higher Dance – has been involved in matching up written and practical elements of students' choreography projects. There are criteria for this but they are very broad. For the RAD, this is decided by a committee of experienced teachers and examiners, who know from experience the suitability of certain techniques to certain levels. More recently, academics have been involved in this, particularly in terms of child physical development. Until now, the syllabus has been very similar for the 33 years she has been teaching. But now, for example, the new Pre-Primary and Pre-Primary Syllabus in Dance is based on research into child development, how children are becoming less mobile and flexible, and also into the type of dancers that the current system is producing at the top levels. There are concerns that British dancers don't have the flexibility and range of movement required. This new syllabus has been very successful and they are now implementing a similar approach to Grades I-III. Also, at the same time, the Vocational Syllabi are being worked on to improve them along the same lines - currently working on Intermediate Foundation and Intermediate, to incorporate a larger vocabulary of dance steps and movements rather than just technical exercises. The buzz word is 'feeling before form' - gave e.g. of assemblé.

5. *When deciding what techniques to teach to beginners, what criteria do you use?* There are 2 different schools of thought about this. E.g. a 10 year old beginner – do you put them in with a class of a similar age (who might have been dancing for 5 years?) Or do you start them at the beginning with Pre-Primary and get the technique right and then move them on quickly? It seems to depend on how the teacher handles it. With an even older beginner, might put them straight into Intermediate Foundation – depends on their previous experience of other dance styles.

6. *If not mentioned, would you use any of the following criteria to distinguish between levels:*

Physical Criteria: Speed: Yes, increases with levels

Accuracy: Technical accuracy is required and students are marked down in exams if don't have this. If make a mistake in the dance i.e. in the choreography this is not so important. Increases with levels

Reliability: essential – increases with levels. Very important for professional dancer

Correct body/hand position: Absolutely essential and very little margin for error here. Increases with levels.

Degree of complexity: Yes, both more individually difficult steps and increasing longer and more difficult combinations. Increases with levels.

Degree of autonomy: Not looked for at lower levels but would expect it in Vocational students.

Evidence of Underpinning Knowledge (Cognitive); More understanding of mood and musicality (see below). Grades 7 & * need understanding of different ballet styles e.g. Romantic (Giselle), Classical (Swan Lake). Also in the lower Grades, do different character styles e.g. Hungarian, Polish, Russian. This is not really assessed through the RAD system but at vocational college students would do investigative work which would be assessed. Also more work on autonomy here.

Evidence of Affective aspects: Yes, especially interpretation and musicality –increases up the levels.

Evidence of Reflective Practice: Essential for each dance to recognise their own limitations and what they need to work on. Safe practice is also important to prevent injury. This increases with the levels and is very important for professional dancers.

7. Thinking of the criteria mentioned above, any suggestions as to how these could best be described or otherwise illustrated?

In the RAD system, it is the technical exercises that differentiate the levels, and the syllabus lays this out.

8. Given the suggestions above, what are the implications for teaching and assessment of practical/technical skills?

Important to foster enjoyment and energy. Break down exercises into steps or groups of steps. Demonstrate them. Students copy, teacher gives corrections, demonstrates again if necessary, gradually build it up to the whole. Some students can do the steps but find it difficult to remember the combinations or enchainements.

Assessment: all RAD assessment is by practical performance. Even the highest levels (Advanced 2, Solo Seal) are by this method – there is no written work or oral questioning. SQA Higher Dance: 4 Units, have to choose 4 dance styles. Have to plan a choreography of their own – other students perform this and it is assessed. Also have to perform 2 solos themselves. All these 3 performances are evaluated by the students in an open-book exam. There is no investigative work.

2 areas of UK relevant to dancers; 1. re different dance styles and their expression, 2. physical side – knowledge of their anatomy and how it works, what can help them to improve their own performance and prevent injury. These can be seen in performance but only at the highest levels.

Appendix XIII(viii): Interview Questions: QCDA

1. *Name:* Kevin Barton

2. *Company or body for whom you work:* QCDA

3. *Position:* Curriculum Adviser

4. *Involvement with the allocation of practical/technical skills to levels:* Subject Expert in Contemporary Dance and PE. Scrutinises the qualifications submitted to QCDA in this subject area in order to advise on their allocation to the appropriate level. When scrutinising, looks for key words – but the words used in cognitive qualifications don't exist for practical ones. The Subject Experts use their instinct sometimes which is imperfect. A recognised degree of subject expertise is required to allocate qualifications in that subject to levels.

5. *When deciding what techniques to allocate to the lowest level, what criteria do you use?* The QCDA have not yet developed criteria for this and this is something they probably need to do in the future. Beyond L1, need a subject expert to allocate; if they don't have one in house, e.g. visual arts, then they contract out. No cross-subject criteria have been developed, all allocation to levels is done within the subject area at the moment.

6. *If not mentioned, would you use any of the following criteria to distinguish between levels: As above, no criteria yet formally in use, so I asked which of these he would think appropriate to use:*

Kevin used an illustration of progression in practical skills from unconscious incompetence, to conscious incompetence, to conscious competence, to unconscious competence – the latter is close to the concept of automaticity. He said, once unconscious competence is achieved, the performer can then concentrate on the affective aspects.

Physical Criteria: Speed: Yes, could be used

Accuracy: Yes, definitely agree, accuracy is important to establish in the lower levels

Reliability: Yes, consistency is important, particularly at higher levels.

Correct body/hand position: Yes, important, especially in respect of injury prevention a consistent correct position is important

Degree of complexity: Agree, though often a really good performance of a skill can look effortless and this can be deceiving, especially to students at lower levels – it looks easy!

Degree of autonomy: Yes, definitely

Evidence of Underpinning Knowledge (Cognitive): This would be expected more at the higher levels. It is more obvious in more formal dance styles. Within the levels offered in schools, kids find it frustrating to be asked to write about and review performance

Evidence of Affective aspects: Yes, increasingly important as you go up through the levels and can be assessed in performance

Evidence of Reflective Practice: Learners become more aware of this as go up to higher levels – it becomes more of a conscious thing as the performance itself becomes less conscious.

7. *Thinking of the criteria mentioned above, any suggestions as to how these could best be described or otherwise illustrated?* Can be expressed in words to a certain extent, but there are limits to this. QCDA is currently undertaking a project of exemplification of levels 3-8 in PE which are almost exclusively video files – at the moment assessors have the level in their heads, but this should lead to more standardisation of levels. The same is being undertaken for music. This is more difficult at the higher levels where more innovation, improvisation or interpretation might be expected, though all performances should be ‘correct’.

8. *Given the suggestions above, what are the implications for teaching and assessment of practical/technical skills?*

More emphasis should be placed on practical performance for assessment, maybe with student’s commentary on video or audio – much easier these days. Students can use this to comment on their own work, on the work of other students and on professional level performances they have seen. They find it easier to articulate their thoughts by this method than by writing. Some qualifications (BTEC was mentioned) are starting to reflect this approach.

Re teaching, the approach would be show the whole, take apart and teach the parts, then put back together. In higher levels, the students might be asked to take the work apart themselves and re-assemble it. If looking for improvisation and innovation (e.g. in contemporary dance), might ask students to put it back together in a different way.

Parity of qualifications is an issue now and likely to become more of one. After this conversation, Kevin is considering requesting some kind of cross-subject moderation, maybe of a small group of related subjects at first, as at the moment levelling is done almost entirely within subject specialisms and therefore parity is open to examination.

Kevin used the term 'silo mentality' when describing how the subjects tended not to relate to each other.

Appendix XIV:

SQA HN Arrangements Document Hospitality and Professional Cookery



Arrangements for:

Higher National Certificate in Hospitality (G7N6 15)

Higher National Certificate in Professional Cookery (G7N4 15)

Higher National Diploma in Hospitality Management (G7N7 16)

Higher National Diploma in Professional Cookery (G7N5 16)

Validation date: November 2004

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HNC/D Hospitality and Professional Cookery

History of Changes

It is anticipated that changes will take place during the life of the qualifications, e.g. additional Optional Units, updated specifications etc, this section will record these changes.

Arrangements Document Changes

Date	Version Number	Author	Description of Change
July 09	06	CM	Section 2.4 – Other Related Qualifications - updated Section 3 – Aims of Qualification - updated
Dec 08	06	CM	Language Units with lapse date of 31 July removed from frameworks and current Units added.
			Events: An Introduction – F35W 34 added to the optional sections of the frameworks for HNC Hospitality and HND Hospitality Management. Managing an Event – D4WG 35 and Conference and Exhibition Management – D4VX 34 removed from the frameworks for HNC Hospitality and HND Hospitality Management as they are now in a lapse phase.
			Scottish Licensing Law – F1B6 34 added to the optional sections for the frameworks for HNC and HND Professional Cookery and Hospitality/Hospitality Management.
			Introduction to Self Employment and Small Business – A6HD 34 removed from frameworks as now in a lapse phase
			Human Resource Management for the Hospitality Industry 1 – A78C 34 removed from frameworks as now in a lapse phase
			Planning, Developing and Marketing the Menu – A77T 33 removed from frameworks as now in a lapse phase
Aug 07	05	JH	Credit transfer section updated and Appendix 1 added to the Arrangements Document. Appendix 1 can be downloaded separately from the Arrangements Document.
			New Hospitality Skills for Work course added to progression info. HND Hospitality: Management of Human Resource 1&2 added to framework HND Prof Cook: Hosp Industry, Food and Beverage Service added to optional section HND frameworks: Language Units updated Management of Food and Beverage Operations – Core Skill Problem Solving at Higher
June 06	03	JH	Work Experience DV0M 34 added to the limited option grouping for both HND frameworks. The Unit replaces A6T1 34 which has been given a finish date of July 2012.
			Core Skills: Automatic certification of the Problem Solving Core Skill at SCQF level 5 will be given on successful completion of either HNC Graded Units. Problem Solving at SCQF 6 will be given on successful completion on either HND Graded Units.
			The following Units have been added to the optional section of the HND Hospitality framework: Marketing Planning Process, DV8N 35 Marketing Planning in Travel and Tourism, DK04 35
			HND Hospitality Management framework has been amended to reflect the opportunity for a candidate to use the HNC Professional Cookery Graded Unit to count towards achieving the HND. Please see the guidance note in section 5.4.

Arrangements Document Changes (continued)

Nov 05	2	JH	Accommodation Servicing added to HNC Hospitality framework. Optional section – Front Office route only.
			PDP, WRE and WCE paper added (5.1.5) and frameworks amended.

Unit Specification Changes

Date	Version Number	Author	Description of Change
Jan 09	02	CM	Hospitality: Financial & Control Systems – DL3T 34 Assessment of manual costings removed. Manual costing added to content and context.
			Hospitality: Financial Accounting – DL3R 34 Day books removed.
			Managing Financial Resources in Hospitality – DL3A 35 Labour and overhead variances removed.
			Accommodation Management – DL3C 35 Knowledge and skills reordered and minor changes to reflect revised assessment exemplar.
Dec 08	02	CM	Accommodation Servicing – minor changes to reflect revised assessment exemplar. Additional guidance on content and context.
Mar 08	02	CM	Alcoholic Beverages – DL3E 34 Minor changes to reflect revised assessment exemplar.
June 07	02	JH	Prof Cook GU1 additional scenario added Hosp GU1 – mark scheme updated
June 06	02	JH	Food Preparation for the Licensed Trade – DL3J 34 Minor amends made to the knowledge and skills for clarification
			Hospitality Management Accounting – DL3W 35 Minor amends made to the wording in the knowledge and skills for clarification
Nov 05	02	JH	Food Production Processes - DL3K 34 Outcomes reordered.
			Gastronomy – DL3M 35 Outcome 2, Evidence requirements altered
			Front Office Procedures 1 – DL3N 34 Outcome 4, minor wording change
			Food and Beverage Service – DL3G 34 Candidate Guidance, minor wording change

1. Introduction

This arrangements document is for the revised HNC Hospitality and HND Hospitality Management and HNC/D Professional Cookery which were implemented in centres from August 2005. These qualifications replace HNC Hospitality Operations, Front Office and Licensed House and the HND Hospitality Management, and Culinary Arts with Management.

The new HNC/Ds in Hospitality and Professional Cookery are designed to equip candidates with the knowledge, understanding and skills required for success in current and future employment or progression to further academic and/or professional qualifications in this sector.

The document is designed to assist centres who will be delivering the revised qualifications and outlines the background to the development, the general and specific aims of the qualifications, the qualification structure and content, recommended delivery and assessment guidance.

2. Rationale for the revision of the qualifications

2.1 Background

The original unitised HNC in Hospitality Operations and HND in Hospitality Management were introduced in 1989. These were further developed into a suite of 7 HNC/Ds in 1996/7 in response to a proliferation of multiple but similar centre devised awards. From the diverse range of courses, 7 individual HNC/Ds were developed. These reflected different areas of the industry for example front office operation, licensed house and professional cookery.

The framework of awards also reflected the occupational mapping compiled by the then Lead Body/ National Training Organisation (NTO). The suite of 7 qualifications covering the Hospitality and Catering sector were validated in 1996. The qualifications were developed as a result of comprehensive consultation with employers, colleges and Universities at the time.

When the revised qualifications were introduced in 1996 the future demand for HN specialist awards and indeed SVQs was still speculative. Unfortunately market demand for the specialist HNC/Ds has proved disappointing and has not operated at a sustainable level.

When reviewing the current suite of qualifications the fact that the projected figure for some awards had not been realised was taken into account. In addition, the changes within the industry including the growth of the industry and the employee trends in the industry had to be considered.

The uptake statistics suggested that a full HNC/D may not be the best way of meeting demand in the specialist areas but rather smaller qualifications that directly underpin particular SVQs/occupations and which are more accessible to in-work candidates may be more attractive. This will be the subject of future research and development work in collaboration with the new Sector Skills Council for the sector, People 1st.

The result of extensive consultation is a revised framework of qualifications which are flexible enough to reflect the recent changes in the industry and ensures that candidates are equipped with the skills and knowledge they need to be effective in a fast moving environment.

The revised qualifications take account of:

- The need for general qualifications with specialist provision accommodated for within a flexible structure
- Units which allow for progression to meet the design rules and SCQF requirements
- Changes in award provision in other areas, NQ and SVQ

Four qualifications have replaced the current 7 qualifications. Specialist streaming within the revised qualifications is possible via the inclusion of a wide range of specialised Units. This enables candidates to study a particular vocational area for example patisserie, front office, licensed house operations, or professional cookery while still obtaining the key competences required for entry into operational, supervisory and management positions in a wide range of establishments.

2.2 Market research, consultation and development processes

The Hospitality, Tourism and Leisure industry contributes around £4.4 billion to the Scottish economy and employs a workforce of around 247,000 people in Scotland. Comprehensive labour market intelligence has, and continues to be drawn together through the new Sector Skills Council, People 1st.

The Labour Market Review 2003 for the Hospitality Industry published by the Hospitality Training Foundation (now People 1st) highlights the size, scope and importance of the sector but also some of the problems, for example:

- The proportion of the hospitality workforce without a qualification has increased by 7.5 %
- There has been a steady reduction in the number of full-time employees. Currently only 48.1 % of the workforce work full-time.
- Scotland has the highest percentage of vacancies as a proportion of its total workforce.

Current labour market information and trends can be found at:

www.people1st.co.uk

www.futureskillsscotland.org.uk

In reviewing these awards consultations were undertaken at key stages in the development schedule. A steering group helped guide the overall development process and in addition a review group consisting of members of all centres offering the awards gave feedback on the development process at key stages.

Stakeholder	Method of Consultation
Delivering Centres	<ul style="list-style-type: none"> • Initial seminar with representatives from all delivering centres covering the different vocational areas ie professional cookery, food and beverage service, accommodation and front office. (Questionnaire sent to all centres for circulation to staff who could not attend). • Input on HN Review into an SFEU Subject Network group and a Heads of Hospitality meeting. • 2 Postal questionnaires to all delivering centres. (The first questionnaire focussed on the structure and content of awards the second questionnaire focussed on optional Units/candidate destinations/completion statistics) • 2 National review meetings for all delivering centres. (The first meeting focussed on the proposed content and structure of awards, the second meeting focused on the review of Units.) • Information Updates posted on SQA Website - HN Hospitality page.
Employers	<ul style="list-style-type: none"> • Questionnaire sent to employers (information gathered on award content and structure) • Information on current working practices gathered from the occupational standards review – carried out by People 1st.
Higher Education	<ul style="list-style-type: none"> • Focus group meeting • Questionnaire distributed

2.3 Summary of feedback

An initial consultation seminar and follow up questionnaire responses highlighted the following main issues regarding the HNC/D qualifications:

- Consideration should be given to reducing the number of qualifications. Qualifications with a common core and specialist option routes should be considered as an alternative.
- Unit assessments should be more practical in nature and less theory based where possible.

In addition, detailed feedback was gathered relating to issues with the current Units including suggested recommendations for change.

Feedback from consultations with Employers and Higher Education centres highlighted the following main issues:

- Food Hygiene legislation must be included. The appropriate level to be included would be REHIS (Royal Environmental Health Institute Scotland) Intermediate Certificate.
- Health and Safety legislation should be taught alongside Food Hygiene.
- There should be a strong emphasis on the inclusion of development of practical skills and applied theories.
- Work Experience remains a valuable component of the learning experience.
- The inclusion of languages should continue to be optional as these are beneficial rather than essential.
- Legislation governing the sale of alcoholic beverages must be included in the appropriate Units.

The feedback that was generated from the initial consultation seminar with centres and the follow up consultations with HE and Employers formed the basis for the initial discussion with the steering group regarding the revised structure and content of the qualifications. Section 5.1 details how the issues noted above were accommodated in the revised qualification structure and content.

2.4 Other related qualifications

The current SQA catalogue includes the following:

National Qualifications (NQ)

Courses from Access 3 to Higher level (SCQF 3, 4, 5 and 6 respectively) covering Practical and Professional Cookery, Professional Patisserie, General Operations and Food and Drink Service.

These contain both exam based and project based courses.

Scottish Group Awards in Hospitality which are made up these NQ courses and Units are available at Intermediate 2 and Higher level. A review and future development work is currently ongoing to develop a National Certificate Award(s) in Hospitality and Professional Cookery.

Skills for Work (SfW)

The Intermediate 1 Course provides a broad, experiential introduction to hospitality professions. The focus is on experiencing the professional kitchen and restaurant; learning about the different roles and responsibilities in hospitality professions and beginning to develop vocational skills and knowledge. This course is an introductory competence based award and is mainly offered to school candidates in partnership with colleges.

National Certificate in Hospitality at SCQF level 4 (NC)

This course provides an introduction to the four main operational areas within the hospitality industry – food preparation, food service, reception and accommodation. In addition it gives the opportunity to cover customer care, food hygiene and health and safety. The Units have been compared to the National Occupations Standards for the hospitality industry and meet many of these skills requirements.

Professional Development Awards (PDAs)

Two PDAs are available in the areas of Professional Cookery and Professional Patisserie, further work will be carried out to investigate the need for other specialised PDAs.

Scottish Vocational Qualifications (SVQ)

Revised National Occupational Standards were implemented from November 2005. The framework includes a variety of SVQs available from level 1 to level 3 (SCQF 4 to 6/7). The awards cover the following areas: Professional Cookery, Food and Drink Service, Housekeeping, Front Office, Hospitality Supervision and Hospitality Service Multi-skilled.

2.5 Progression

The table below details examples of SQA qualifications in this sector and shows possible progression pathways.

SCQF	SQA National Units Courses and Group Awards	Higher Education	Scottish Vocational Qualifications (SVQs)	SCQF
12		Doctorate		12
11		Masters	SVQ level 5	11
10		Honour Degree		10
9		Ordinary Degree		9
8		HND/ Dip HE Hospitality Management Professional Cookery		8
7	Advanced Higher	HNC /Cert HE Hospitality Professional Cookery		7
6	Higher <i>NQ Courses e.g.</i> Food and Drink Service Professional Cookery Professional Patisserie <i>Scottish Group Awards e.g.</i> Hospitality Food and Drink Service Professional Cookery <i>NQ Units for the areas shown above</i>		SVQ level 3 A range of qualifications eg: Hospitality Supervision, Professional Cookery Professional Patisserie	6
5	Intermediate 2 <i>NQ Courses e.g.</i> Practical Cookery General Operations Professional Cookery <i>Scottish Group Award: Hospitality</i> <i>NQ Units covering a variety of areas</i>		SVQ level 2 A range of qualifications eg: Professional Cookery, Food and Drink Service, Front Office Housekeeping Hospitality Multi-skilled	5
4	Intermediate 1 <i>NQ Course e.g.</i> Practical Cookery Skills for Work – Hospitality NC Hospitality		SVQ level 1 A range of qualifications eg: Food Prep and Cooking, Food and Drink Service, Front Office Housekeeping Quick Service Hospitality Multi-skilled	4
3	Access 3 NQ Units in Food Preparation NQ Unit Food Hygiene			3
2	Access 2 NQ Units in Basic Food Preparation			2
1	Access 1			1

2.5.1 Degree qualifications

The qualifications provide candidates with the relevant mix of competencies to enable immediate entry to employment whilst at the same time allowing candidates an articulation route to degree level study. A large number of related degree programmes are offered at a range of institutions throughout Scotland. The HNC/Ds provide entry variously into 2nd and 3rd year of degree programmes.

2.5.2 Professional recognition

The HN awards in Hospitality and Professional Cookery have been developed to allow candidates to gain the maximum benefit from their programme of study. Consequently, value has been added to the qualifications by working in partnership with the professional body for food hygiene to get recognition for the achievement of the Royal Environmental Health Institute of Scotland (REHIS) Food Hygiene Intermediate course within the Food Hygiene Unit. The incorporation of food hygiene at this level was a recommendation made by employers during the initial consultation phase.

This Unit is broadly equivalent to the REHIS Intermediate qualification and is jointly certificated by SQA/REHIS. To obtain a joint certificate, candidates must be entered for the Unit and the joint certificate award code. The joint certificate award code that candidates should be entered for is G75W 04, the joint certificate is entitled Food Hygiene Practices: Intermediate.

2.6 Target client group

The hospitality and professional cookery programmes are suitable for a wide range of candidates including:

- school leavers
- adult returners to education
- candidates in employment who wish to enhance their career prospects
- candidates who wish to start their own business and require a broad grounding in business

3. Aims of the Qualifications

3.1 General aims

All HNCs and HNDs have a range of broad aims that are generally applicable, e.g.

1. Developing planning and analysis skills
2. Developing problem solving skills
3. Developing the ability to be flexible and to work co-operatively with others
4. Developing study and research skills
5. Developing critical and evaluative thinking
6. Enabling progression in the SCQF
7. Developing employment skills and enhancing candidates' employment prospects
8. Providing opportunities for career planning and enhancing candidates' employment prospects

3.2 Specific aims - HNC Hospitality/ HND Hospitality Management

The HNC Hospitality and Hospitality Management are closely linked. This makes it inevitable that they should have similar objectives.

The qualifications should enable candidates to:

9. Be prepared for employment within the hospitality industry in a team leading/supervisory level post
10. Gain leadership skills and a customer focused attitude through an understanding of the role of a team leader/supervisor
11. Gain an understanding of the structure and organisation of the industry and the influence of the industry on the economy
12. Develop knowledge and skills in the main operational areas, such as, food and beverage service styles and techniques, food hygiene and control systems
13. Apply and integrate knowledge and skills across hospitality operational areas
14. Undertake options to permit an element of vocational specialism, in particular in the areas of food production, accommodation services, front office, alcoholic beverages and licensed house operations
15. Be prepared for progression to further studies in Hospitality or related disciplines

An HND Hospitality Management can be distinguished from the HNC in terms of:

16. The wider range of competences and expanded knowledge which a candidate can achieve e.g. the management of accommodation, accounting, human resource management, management of hospitality organisations and the opportunity to plan and manage a food and beverage operation.
17. Apply and integrate knowledge and skills across hospitality management areas
18. The likely entry point to an organisation
19. The speed of progression within an organisation
20. The level of entry to further academic qualifications
21. Significant optional Units to allow development in other areas relevant to future (or current) employment or progression within Higher Education

3.3 Specific aims - HNC Professional Cookery/ HND Professional Cookery

The HNC Professional Cookery and HND Professional Cookery are closely linked. This makes it inevitable that they should have similar objectives.

The qualifications should enable candidates to:

22. Gain the skills and knowledge required to source quality commodities and resources
23. Apply and integrate knowledge and skills across culinary operational areas
24. Develop knowledge and skills such as specialist culinary skills, food hygiene and control systems
25. Undertake options to permit an element of vocational specialism, in particular in the areas of production cookery or patisserie
26. Gain leadership skills and a customer focused attitude through an understanding of the role of a team leader/supervisor
27. Be prepared for progression to further studies in Hospitality or related disciplines

An HND Professional Cookery can be distinguished from the HNC in terms of:

28. The wider range of competences and expanded knowledge which can be achieved, e.g. further development of specialist culinary skills, accounting, human resource management, management concepts, menu compilation and design, and the opportunity to plan and manage a food and beverage operation.
29. Application and integration of knowledge and skills across specialist culinary areas
30. The likely entry point to an organisation
31. The speed of progression within an organisation
32. The level of entry to further academic qualifications
33. Significant optional Units to allow development in other areas relevant to future (or current) employment or progression within Higher Education.

3.4 General and specific aims, linked to individual Units

The following table identifies how these aims are met by individual Units:

Unit	Objectives
Hospitality Industry	4, 9, 11
Hospitality Supervision	1, 3, 9, 10, 23
Hospitality: Financial and Control Systems	12, 21
Food Hygiene	12, 21
Food and Beverage Service	10, 12
Food Production Processes	3, 11, 13
Accommodation Servicing	11, 13
Hospitality Front Office Procedures 1	13
Hospitality Front Office Procedures 2	13
Licensed Premises Operations	11, 13
Alcoholic Beverages	13
Food Preparation: Licensed House	13
Food Classification and Purchase	4, 20
Production Cookery: Hot Kitchen	21, 22
Production Cookery: Cold Kitchen	21, 22
Production Cookery: Sweets and Desserts	21, 22
Patisserie	21, 22
Specialised Patisserie	21,22
Specialised Patisserie: Advanced	21,22, 29
Fermented Patisserie Products	21,22
Pastry	21, 22
Integrated Production Cookery	3, 21
Human Resource Management	15
Management of Food and Beverage Operations	1, 3, 9, 15, 25, 23
Managing Hospitality Organisations 1	4, 25, 15
Managing Hospitality Organisations 2	4, 15, 25
Hospitality Financial Accounting	15, 25
Hospitality Management Accounting	2, 15
Managing Financial Resources in Hospitality	2, 15
Accommodation Management	15
Employment or Workplace Experience	7, 8, 9, 14, 24
Kitchen Planning and Design	25
Gastronomy	25
Graded Unit: Hospitality Graded Unit 1	2, 4, 5, 6
Graded Unit: Hospitality Graded Unit 2	2, 4, 5, 6, 14,16, 17, 18, 24, 26, 27
Graded Unit: Professional Cookery Graded Unit 1	2, 4, 5, 6
Graded Unit: Professional Cookery Graded Unit 2	2, 4, 5, 6,14, 16, 17, 18, 24, 26, 27

4. Recommended Access to the Qualifications

As with all SQA qualifications, access to the awards will be at the discretion of the centre. The following recommendations are for guidance only. Examples of appropriate formal entry qualifications are specified below. They are not exhaustive or mutually exclusive and may be considered in a variety of combinations.

- Scottish Group Awards in Hospitality at Intermediate 2 or Higher
- Appropriate groupings of National Units
- Any other relevant Scottish Group Award at Intermediate 2 or Higher
- Any 2 National Qualifications at Higher together with 3 Standard Grade passes at 3 or above.
- An SVQ at level 2 or 3 in a relevant area
- Different combinations of relevant National Qualifications, Vocational Qualifications and equivalent qualifications from other awarding bodies may also be acceptable
- Relevant work experience
- For candidates where English is not their first language it is recommended that they possess English for Speakers of other Languages (ESOL) level 5 or a score of 5.5 in IELTS.

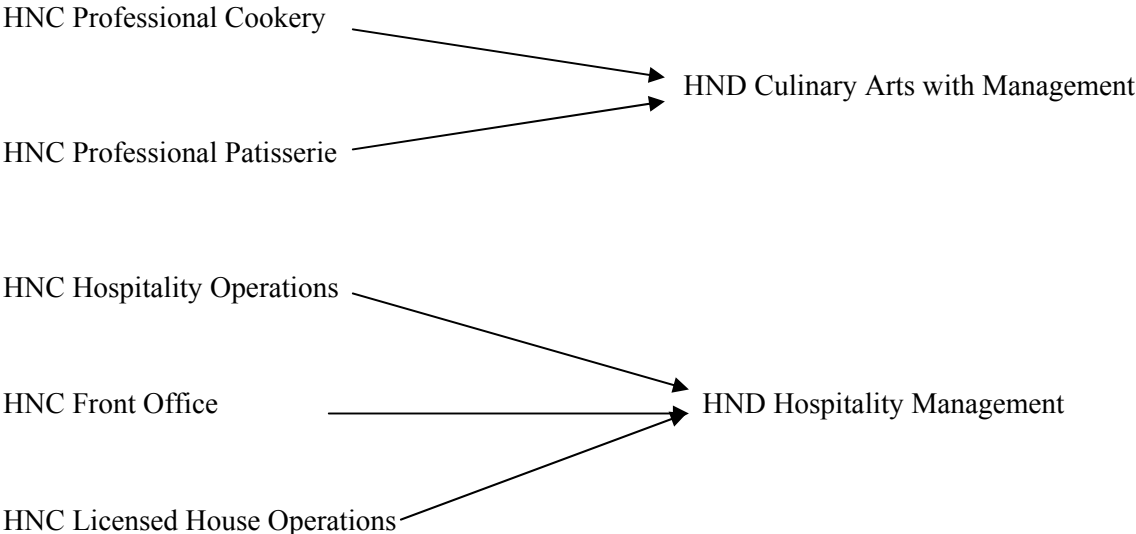
5. Structure of Qualifications

5.1 Summary of changes


5.1.1 The main changes to the qualifications:


- The addition of specialist vocational routes within the 4 qualifications, this reflects the move from 7 awards to 4 awards. This allows the greatest level of flexibility for presenting centres whilst ensuring candidates are able to specialise in a particular vocational area for example, licensed trade or patisserie. The reduction in the number of qualifications was recommended in the initial consultation feedback.
- The amendment to the title of HND Culinary Arts with Management to HND Professional Cookery.
- The amendment to the title of HNC Hospitality Operations to HNC Hospitality. This reflects the revised content of the qualification and the inclusion of specialist routes within the qualification.
- The introduction of the Scottish Credit and Qualifications Framework (SCQF). Each Unit that is included in the qualification has been levelled against a Unit level descriptor. This levelling process ensures that the Units within the qualifications, that are at the same level, are broadly comparable in terms of the general level of difficulty. Early consultation feedback highlighted the importance of developing practical skills and applied knowledge, when reviewing the Units in the practical areas careful consideration was given to how practical skills would be developed to an advanced level.
- The introduction of graded Units. Candidates have to achieve a one credit Graded Unit to gain the HNC or first year of an HND and a two credit Graded Unit in the second year of an HND. The graded Unit will assess the application of knowledge and skills in the planning and evaluating of a given task.
- 32 Units were created/revised for the development of these awards. Some Units have been amalgamated to reduce the overlap of content or assessment between current single credit Units.

5.1.2 Current HN progression structure:



5.1.3 Revised progression structure:

HNC Professional Cookery  HND Professional Cookery

HNC Hospitality  HND Hospitality Management

Note: Optional routes within the HNC/Ds are available in the areas of, professional patisserie, licensed house operations and front office.

5.1.4 The main changes to the Units in the qualifications:

- The amalgamation of the Units, Supervision and Human Resource Organisation and Training Skills and elements of Customer Care into one Unit, Hospitality Supervision. This Unit contains two practical assessments which are both carried out within the hospitality environment that the candidate is familiar with, ie kitchen, restaurant, bar etc. This is to ensure the candidate has the greatest opportunity to apply the knowledge and skills they have learned in an environment they may be working in.
- The current Industrial Experience Unit requires candidates to spend a large portion of time, often during the summer months, on placement. Although there was agreement that the need for the work experience/industry placement should remain it was felt that the Unit requirements had to be more flexible. It was therefore agreed that a series of Units would be made available within the framework to take account of the needs of different candidates. For example, candidates who had come from the industry and were therefore bringing with them a great deal of experience or candidates who were already working part time within the industry.
- The Unit Bar and Cellar has been broadened in content to include all aspects of operating a licensed premises, the Unit has changed title to reflect the changes to content and is now titled Licensed Premises Operations. There is a particularly emphasis on the area of legislation.
- New Units have been created in the area of food production and patisserie to address the issues of skills development and to ensure that candidates have as much practical experience as possible. Food hygiene and health and safety have been incorporated into the new Units to ensure that candidates understand the importance and relevance of these areas to food production.

5.1.5 The inclusion of Personal Development Planning, Work Role Effectiveness and Workplace Communication in English in the HN Hospitality and Professional Cookery frameworks

Where appropriate the HN Units noted above have been added to all SQA frameworks. The following sections detail where the Units have been added to the HN awards in Hospitality and Professional Cookery.

Work Role Effectiveness (DG6E 34/DG6G 35) in the HNC Frameworks: HNC Hospitality and HNC Professional Cookery

The current HNC and HND frameworks contain the Unit ‘Industrial Experience in the Hospitality Industry’ as an optional Unit. This Unit requires candidates to spend a large portion of time, often during the summer months, on placement, (ie after the candidate undertakes a summer placement after they have completed the HNC and before they move on to the HND).

During the consultation phase for the revised awards there was agreement from stakeholders that candidates needed to undertake an element of work experience as part of the HN awards. However, it was agreed that the Unit requirements had to be more flexible to suit the different backgrounds and experience that candidates might already have, as well as take account of candidate needs to be able to work part time in a related field over a period of time.

It was therefore agreed that a series of Units would be made available within the HND frameworks in a 'limited option' group to take account of the needs of different candidates whilst ensure that some element of work experience was undertaken or an evaluation of previous work experience was completed. This would allow candidates who had come from the industry and were therefore bringing with them a great deal of experience to evaluate that experience. Whilst candidates with no experience could undertake a placement over a period of time on a part time basis or if its preferable the work experience could still be done in a block of time during the college academic year.

Stakeholders also agreed that it was more appropriate that this 'limited option grouping' form part of the HND rather than the HNC as the HNC covers a large range of practical skills some of which would have to have been excluded to make room for a work experience Unit. For example in the Prof Cookery HNC aside from the mandatory Unit requirements there are two optional groups one of which relates solely to professional cookery practical skills, the other optional group relates to professional patisserie practical skills. Within Hospitality the optional Units cover specific routes in Front Office, Hospitality Operations and Licensed Premises.

It was also noted that from current delivery practice the candidates who benefited most from the work experience element of the framework were candidates who were studying the HND as this allowed centres to relate other Units in the framework ie human resource management or organisational structures etc to the experiences that candidates had whilst on their work experience.

It was agreed that Work Role Effectiveness should be included in the 'limited option grouping' in both the HND Hospitality Management and HND Professional Cookery at level 7 and level 8.

Workplace Communication in English (DE1K 33) and Personal Development Planning (DE3R 34) in the HNC Frameworks:

HNC Professional Cookery

The Units Personal Development Planning and Workplace Communication in English have not been included in the HNC Professional Cookery framework. The HNC framework has been devised to allow candidates to take one of the possible two optional routes available which reflects their particular specialist subject area. The specialist optional routes cover Professional Cookery or Professional Patisserie. Candidates have to complete a minimum of six credits in either skills area to complete the HNC. This reflects the main aims of the HNC which is to develop specialist culinary skills and knowledge in addition to the supervisory, hygiene and food production knowledge covered in the mandatory Units.

The Units have been or are already available as optional Units in the HND Professional Cookery framework.

HNC Hospitality

The Units have been added to the Front Office route in the HNC framework where there is a requirement for candidates to complete one additional credit over and above the Units which make up that subject specific route.

The Units have not been added to either of the other two available routes within this award (Hospitality Operations and Licensed Premises) as both these routes require a minimum of four credits within a particular skills or knowledge area to be completed to achieve the necessary competence of that particular vocational specialism.

The Units have been or are already available as optional Units in the HND Hospitality Management framework.

5.2 Key competences common across the framework

During the development of the framework there was consensus on the essential knowledge and skills for the sector. These are represented in the common Units in the mandatory section. This is illustrated in the following chart.

Units	HNC Hospitality	HND Hospitality Management	HNC Professional Cookery	HND Professional Cookery
Hospitality Supervision	X	X	X	X
Hospitality Financial and Control Systems	X	X	X	X
Food Hygiene Intermediate	X	X	X	X
Food and Beverage Service	X	X		
Food Production Processes	X	X		
Hospitality Industry	X	X		
Accommodation Servicing	X	X		
Hospitality Front Office Procedures 1	X	X		
Food Classification and Purchase			X	X
Production Cookery: Cold Kitchen			X	X
Production Cookery: Hot Kitchen			X	X
Production Cookery: Sweets & Desserts			X	X
Patisserie			X	X
Human Resource Management		X		X
Hospitality Financial Accounting		X		X
Management of Food & Beverage Operations		X		X
Employment/Workplace Experience		X		X

5.3 Qualifications structure

5.3.1 HNC Hospitality

Mandatory Units — 8 credits	Unit code	SCQF level	Credit value
Hospitality Industry	DL3V 34	7	1
Hospitality Supervision	DL3X 34	7	2
Hospitality Financial and Control Systems	DL3T 34	7	1
Food Hygiene Intermediate	F4TL 34	7	1
Food and Beverage Service	DL3G 34	7	2
Hospitality: Graded Unit 1	DL4H 34	7	1
Limited option groups (4 credits required — either group 1, 2 or 3 to be selected)			
Group 1			
Food Production Processes	DL3K 34	7	2
Accommodation Servicing	DL3D 34	7	1
Hospitality Front Office Procedures 1	DL3N 34	7	1
Group 2			
Licensed Premises Operations	DL41 34	7	2
Alcoholic Beverages	DL3E 34	7	1
Food Preparation for the Licensed Trade	DL3J 34	7	1
Group 3			
Hospitality Front Office Procedures 1	DL3N 34	7	1
Hospitality Front Office Procedures 2	DL3P 34	7	1
<i>Plus two credits from the following:</i>			
Accommodation Servicing	DL3D 34	7	1
Personal Development Planning	DE3R 34	7	1
Workplace Communication in English	DE1K 33	6	1
Information Technology: Applications Software 1	D75X 34	7	1
Using Software Applications Packages	D85F 34	7	1
Hospitality Financial Accounting	DL3R 34	7	1
Applying Marketing Principles in Travel and Tourism	DK0E 34	7	1
Creating a Culture of Customer Care	DJ42 34	7	1
Events: An Introduction	F35W 34	7	2
Scottish Licensing Law	F1B6 34	7	1
Communication in German: Basic Operations Reading and Writing Skills	F2FB 33	6	1
Communication in German: Basic Operations Speaking and Listening Skills	F20S 33	6	1
Communication in French: Basic Operations Reading and Writing Skills	F2F9 33	6	1
Communication in French: Basic Operations Speaking and Listening Skills	F20P 33	6	1
Communication in Spanish: Basic Operations Reading and Writing Skills	F2FE 33	6	1
Communication in Spanish: Basic Operations Speaking and Listening Skills	F20W 33	6	1
Communication in Gaelic: Basic Operations Reading and Writing Skills	F2FA 33	6	1
Communication in Gaelic: Basic Operations Speaking and Listening Skills	F20R 33	6	1
Communication in Italian: Basic Operations Reading and Writing Skills	F2FC 33	6	1
Communication in Italian: Basic Operations Speaking and Listening Skills	F20T 33	6	1

Total credits required – 12 (96 SCQF credit points, 48 credit points at level 7)

Arrangements Document: HNC/HNC Hospitality and Professional Cookery

5.3.2 HNC Professional Cookery

Mandatory Units – 6 credits	Unit code	SCQF level	Credit value
Hospitality Financial and Control Systems	DL3T 34	7	1
Hospitality Supervision	DL3X 34	7	2
Food Classification and Purchase	DL3H 34	7	1
Food Hygiene Intermediate	F4TL 34	7	1
Professional Cookery: Graded Unit 1	DL4J 34	7	1
Limited option groups (6 credits required - either Group 1 or Group 2 to be selected)			
Group 1			
Production Cookery: Cold Kitchen	DL46 34	7	2
Production Cookery: Hot Kitchen	DL47 34	7	2
<i>Plus 2 credits from the following:</i>			
Production Cookery: Sweets & Desserts	DL48 34	7	2
Patisserie	DL45 34	7	2
Group 2			
Production Cookery: Sweets & Desserts	DL48 34	7	2
Specialised Patisserie	DL49 34	7	2
<i>Plus 2 credits from the following:</i>			
Fermented Patisserie Products	DL3F 34	7	1
Pastry	DL44 34	7	1
Integrated Production Cookery	DL3Y 34	7	2
Scottish Licensing Law	F1B6 34	7	1

Total credits required – 12 (96 SCQF credit points, 48 credit points at level 7)

5.3.3 HND Hospitality Management

Mandatory	Unit code	SCQF level	Credit value
Hospitality Industry	DL3V 34	7	1
Hospitality Supervision	DL3X 34	7	2
Hospitality Financial and Control Systems	DL3T 34	7	1
Food Hygiene Intermediate	F4TL 34	7	1
Food and Beverage Service	DL3G 34	7	2
Hospitality Financial Accounting	DL3R 34	7	1
Hospitality Management Accounting	DL3W 35	8	1
Management of Food and Beverage Operations	DL43 35	8	3
Accommodation Management	DL3C 35	8	1
Managing Hospitality Organisations 1	DL4L 34	7	1
Managing Hospitality Organisations 2	DL4M 34	7	1
Managing Financial Resources in Hospitality	DL3A 35	8	1
Food Production Processes	DL3K 34	7	2
Accommodation Servicing	DL3D 34	7	1
Hospitality Front Office Procedures 1	DL3N 34	7	1
Hospitality: Graded Unit 1*	DL4H 34	7	1
Hospitality: Graded Unit 2	DL4K 35	8	2
Human Resource Management - Limited option (from 1 to 2 credits required)			
Human Resource Management 1	D46K 34	7	1
Human Resource Management Practice	A6HA 35	8	2
Management of Human Resources in Hospitality 1	F1F7 34	7	1
Management of Human Resources in Hospitality 2	F1HF 34	7	1
Workplace/Employment Experience - Limited option (from 1 to 3 credits required)			
Industrial Experience in the Hospitality Industry	A77D 33	6	2
Work Role Effectiveness	DG6E 34	7	3
Work Role Effectiveness	DG6G 35	8	3
Employment Experience 1	D7HJ 34	7	1
Workplace Experience (<i>replaces A6T1 34</i>)	DV0M 34	7	1
<i>Workplace Experience (Unit will lapse 2010)</i>	<i>A6T1 34</i>	7	2
Options (up to 5 credits required)			
Hospitality			
Licensed Premises Operations	DL41 34	7	2
Alcoholic Beverages	DL3E 34	7	1
Food Preparation for the Licensed Trade	DL3J 34	7	1
Hospitality Front Office Procedures 2	DL3P 34	7	1
Food Classification and Purchase	DL3H 34	7	1
Diet and Nutrition and Related Disorders	D4EA 34	7	1
Advanced Food and Beverage Service	A784 34	7	1
IT			
Information Technology: Applications Software 1	D75X 34	7	1
Using Software Applications Packages	D85F 34	7	1
Business and Enterprise			
Creating a Culture of Customer Care	DJ42 34	7	1
Preparing and Presenting a Business Plan	DE23 34	7	2
Managing a Small Business	A6HG 35	8	2
Economic Issues: An Introduction	DE3A 34	7	1
Health and Safety Legislation: An Introduction	DF87 34	7	1
Scottish Licensing Law	F1B6 34	7	1
Marketing			
Marketing Planning Process	DV8N 35	8	1
Marketing Planning in Travel and Tourism	DK04 35	8	1
Marketing Research	A610 34	7	2
Travel and Tourism			
Applying Marketing Principles in Travel and Tourism	DK0E 34	7	1
Providing Information on the Scottish Tourism Product	DK03 34	7	2
Role of History, Culture & Genealogy in Scottish Tourism	DJ9X 34	7	1

Events			
Events: An Introduction	F35W 34	7	2
Personal Development			
Personal Development Planning	DE3R 34	7	1
Workplace Communication in English	DE1K 33	6	1
Developing the Individual Within a Team	DF45 34	7	1
Languages			
Limited option – up to 3 credits			
Communication in French: Basic Operations Reading and Writing Skills	F2F9 33	6	1
Communication in French: Basic Operations Speaking and Listening Skills	F20P 33	6	1
French of Work: Basic Operational	F0HW 33	6	3
French for Work: Intermediate Operational	F0HX 33	6	3
French for Work: Advanced Operational	F0J3 34	7	3
Limited option – up to 3 credits			
Communication in Gaelic: Basic Operations Reading and Writing Skills	F2FA 33	6	1
Communication in Gaelic: Basic Operations Speaking and Listening Skills	F20R 33	6	1
Gaelic for Work: Basic Operational	F0HV 33	6	3
Gaelic for Work: Intermediate Operational	F0HY 33	6	3
Gaelic for Work: Advanced Operational	F0J4 34	7	3
Limited option – up to 3 credits			
Communication in German: Basic Operations Reading and Writing Skills	F2FB 33	6	1
Communication in German: Basic Operations Speaking and Listening Skills	F20S 33	6	1
German for Work: Basic Operational	F0HT 33	6	3
German for Work: Intermediate Operational	F0J0 33	6	3
German for Work: Advanced Operational	F0J5 34	7	3
Limited option – up to 3 credits			
Communication in Italian: Basic Operations Reading and Writing Skills	F2FC 33	6	1
Communication in Italian: Basic Operations Speaking and Listening Skills	F20T 33	6	1
Italian for Work: Basic Operational	F0HS 33	6	3
Italian for Work: Intermediate Operational	F0J1 33	6	3
Italian for Work: Advanced Operational	F0J8 34	7	3
Limited option – up to 3 credits			
Communication in Spanish: Basic Operations Reading and Writing Skills	F2FE 33	6	1
Communication in Spanish: Basic Operations Speaking and Listening Skills	F20W 33	6	1
Spanish for Work: Basic Operational	F0HR 33	6	3
Spanish for Work: Intermediate Operational	F0J2 33	6	3
Spanish for Work: Advanced Operational	F0J9 34	7	3

Total credits required – 30 (240 SCQF credit points, 64 SCQF points at level 8)

*** The HNC Professional Cookery Graded Unit DL4J 34 may be counted instead of this Unit for candidates progressing from the HNC in Professional Cookery, please see the guidance note in section 5.4.**

5.3.4 HND Professional Cookery

Mandatory	Unit code	SCQF level	Credit value
Food Hygiene Intermediate	F4TL 34	7	1
Hospitality Financial and Control Systems	DL3T 34	7	1
Hospitality Supervision	DL3X 34	7	2
Food Classification and Purchase	DL3H 34	7	1
Hospitality Financial Accounting	DL3R 34	7	1
Kitchen Planning and Design	DL40 35	8	1
Gastronomy	DL3M 35	8	2
Management of Food and Beverage Operations	DL43 35	8	3
Professional Cookery Group Award Graded Unit 1	DL4H 34	7	1
Professional Cookery Group Award Graded Unit 2	DL4G 35	8	2
Limited option groups (6 credits required from either Group 1 or Group 2)			
Group 1			
Production Cookery: Cold Kitchen	DL46 34	7	2
Production Cookery: Hot Kitchen	DL47 34	7	2
<i>Plus 2 credits from:</i>			
Production Cookery: Sweets & Desserts	DL48 34	7	2
Patisserie	DL45 34	7	2
Group 2			
Production Cookery: Sweets & Desserts	DL48 34	7	2
Specialised Patisserie	DL49 34	7	2
<i>Plus 2 credits from:</i>			
Fermented Patisserie Products	DL3F 34	7	1
Pastry	DL44 34	7	1
Integrated Production Cookery	DL3Y 34	7	2
Human Resource Management - Limited option: 1 credit required			
Human Resource Management 1	D46K 34	7	1
Management of Human Resources in Hospitality 1	F1F7 34	7	1
Workplace/Employment Experience - Limited option: from 1 to 3 credits required			
Industrial Experience in the Hospitality Industry	A77D 33	6	2
Work Role Effectiveness	DG6E 34	7	3
Work Role Effectiveness	DG6G 35	8	3
Employment Experience 1	D7HJ 34	7	1
Workplace Experience (<i>replaces A6T1 34, credit value chgd</i>)	DV0M 34	7	1
<i>Workplace Experience (Unit will lapse 2010)</i>	A6T1 34	7	2
Options: up to 7 credits required			
Hospitality			
Specialised Patisserie: Advanced	DL42 35	8	2
Production Cookery: Cold Kitchen	DL46 34	7	2
Production Cookery: Hot Kitchen	DL47 34	7	2
Production Cookery: Sweets & Desserts	DL48 34	7	2
Patisserie	DL45 34	7	2
Fermented Patisserie Products	DL3F 34	7	1
Pastry	DL44 34	7	1
Integrated Production Cookery	DL3Y 34	7	2
Managing Hospitality Organisations 1	DL4L 34	7	1
Managing Financial Resources in Hospitality	DL3A 35	8	1
Alcoholic Beverages	DL3E 34	7	1
Licensed Premises Operations	DL41 34	7	2
Accommodation Servicing	DL3D 34	7	1
Hospitality Industry	DL3V 34	7	1
Up to 2 credits from:			
Food Service for Food Production Personnel	DL3L 34	6	1
Food and Beverage Service	DL3G 34	7	2

Business and Enterprise			
Preparing and Presenting a Business Plan	DE23 34	7	2
Managing a Small Business	A6HG 35	8	2
Economic Issues: An Introduction	DE3A 34	7	1
Personal Development Planning	DE3R 34	7	1
Workplace Communication in English	DE1K 33	6	1
Health and Safety Legislation: An Introduction	DF87 34	7	1
Patisserie			
Specialised Patisserie	DL49 34	7	2
Languages			
Limited option – up to 3 credits			
Communication in French: Basic Operations Reading and Writing Skills	F2F9 33	6	1
Communication in French: Basic Operations Speaking and Listening Skills	F20P 33	6	1
French for Work: Basic Operational	F0HW 33	6	3
French for Work: Intermediate Operational	F0HX 33	6	3
French for Work: Advanced Operational	F0J3 34	7	3
Limited option – up to 3 credits			
Communication in Gaelic: Basic Operations Reading and Writing Skills	F2FA 33	6	1
Communication in Gaelic: Basic Operations Speaking and Listening Skills	F20R 33	6	1
Gaelic for Work: Basic Operational	F0HV 33	6	3
Gaelic for Work: Intermediate Operational	F0HY 33	6	3
Gaelic for Work: Advanced Operational	F0J4 34	7	3
Limited option – up to 3 credits			
Communication in German: Basic Operations Reading and Writing Skills	F2FB 33	6	1
Communication in German: Basic Operations Speaking and Listening Skills	F20S 33	6	1
German for Work: Basic Operational	F0HT 33	6	3
German for Work: Intermediate Operational	F0J0 33	6	3
German for Work: Advanced Operational	F0J5 34	7	3
Limited option – up to 3 credits			
Communication in Italian: Basic Operations Reading and Writing Skills	F2FC 33	6	1
Communication in Italian: Basic Operations Speaking and Listening Skills	F20T 33	6	1
Italian for Work: Basic Operational	F0HS 33	6	3
Italian for Work: Intermediate Operational	F0J1 33	6	3
Italian for Work: Advanced Operational	F0J8 34	7	3
Limited option – up to 3 credits			
Communication in Spanish: Basic Operations Reading and Writing Skills	F2FE 33	6	1
Communication in Spanish: Basic Operations Speaking and Listening Skills	F20W 33	6	1
Spanish for Work: Basic Operational	F0HR 33	6	3
Spanish for Work: Intermediate Operational	F0J2 33	6	3
Spanish for Work: Advanced Operational	F0J9 34	7	3

Total credits required – 30 (240 SCQF credit points, 64 SCQF points at level 8)

5.4 Graded Units

The purpose of the Graded Units in the qualifications is to assess the candidate's ability to integrate and apply the knowledge and/or skills gained in the individual Units in order to demonstrate that they have achieved the principal aims of the qualifications.

For each of the HNCs, one single credit Graded Unit at SCQF 7 must be achieved. For each of the HNDs one double credit Graded Unit at SCQF 8 in addition to the SCQF 7 Graded Unit must be achieved.

Project based Graded Units assess the application of knowledge and skills in the planning and evaluation of a given task, while an examination assesses theoretical knowledge and understanding under invigilated conditions.

For the HNCs and HNDs project graded Units have been used. It was agreed that projects would be better preparation for candidates for employment and that the project format would be appropriate to assess the candidate's understanding of the qualifications principal aims.

For the single credit HNC Hospitality Graded Unit, the project type is a case study. It was agreed that the skills developed in the case study, gathering and interpreting information, analysing, decision making and planning for action would effectively test the material covered in the HNC principal aims. These skills will also be an appropriate preparation for types of employment likely to be entered by HNC candidates.

For the single credit HNC Professional Cookery Graded Unit, the project type is a practical assignment. It was agreed that the skills development in the practical assignment such as, the application of practical skills and knowledge and understanding to a situation that involves task management would cover the principal aims of the award.

On successful completion of the HNC Graded Units candidates will be certificated with the Core Skill of Problem Solving at SCQF 5.

For both HND awards, a two-credit Graded Unit will be used. These take the form of case studies where skills in, gathering and interpreting information, analysing, decision-making and planning are developed. This type of assessment was seen as an appropriate way of testing HND core Units, and as a good preparation for the demands of employment entered into by HND candidates.

Progression route

Where appropriate candidates could achieve an HNC Professional Cookery Graded Unit and progress to the HND Hospitality Management award. The Graded Unit is sufficiently consistent with the HND Group Award aims that it can be counted as credit towards the HND. However, centres should give careful consideration to planning the delivery schedule for candidates to be able to achieve the additional credits needed to complete the full HND, this is particularly important for the hierarchical Units within the framework for example, Accommodation Servicing SCQF 7 and Accommodation Management SCQF 8. Due to the additional credits needed to be achieved by the candidate the progression route although available is not a recommended route but may be appropriate in some exceptional cases.

Within the HND Professional Cookery framework candidates are required to achieve a number of mandatory Units in the area of production cookery or patisserie, as these Units are not present in the HNC Hospitality framework it is not envisaged that this is an suitable progression route. Therefore, at present no similar provision has been made for the progression route for HNC Hospitality to HND Professional Cookery.

5.5 Core Skills

The recommended entry and exit profiles are detailed below:

HNC Hospitality

Core Skill	Entry SCQF level	Exit SCQF level
Communication	4	5
Working With Others	4	5
Problem Solving	4	5
IT	4	4
Numeracy	4	5

HND Hospitality Management

Core Skill	Entry SCQF level	Exit SCQF level
Communication	4	5
Working With Others	4	5
Problem Solving	4	5
IT	4	4
Numeracy	4	5

HNC Professional Cookery

Core Skill	Entry SCQF level	Exit SCQF level
Communication	4	5
Working With Others	4	5
Problem Solving	4	5
IT	4	4
Numeracy	4	5

HND Professional Cookery

Core Skill	Entry SCQF level	Exit SCQF level
Communication	4	5
Working With Others	4	5
Problem Solving	4	5
IT	4	4
Numeracy	4	5

These profiles have been derived from feedback from centre and industry questionnaires and with reference to relevant Modern Apprenticeship frameworks.

Please refer to Appendix 1 for a list of all Units which carry Core Skills certification and Units which provided the opportunity for the development of Core Skills.

6. Approaches to Delivery and Assessment

6.1 Context and content

The HNC and HND in Hospitality and Professional Cookery are designed for candidates who want to enter into positions in a wide range of hospitality and catering organisations at an operational, supervisory or managerial level. All the qualifications have a heavy focus on developing candidate's practical skills and their ability to apply their knowledge to the relevant business environment. The qualifications also aim to prepare candidates for progression to a range of further programmes of study either in higher education or occupational qualifications in the workplace.

6.2 Delivery and assessment

The design principles for HN awards have encouraged a more holistic approach to assessment and this has been adopted in all 4 qualifications. The new HN specification places emphasis on assessing the whole outcome or combination of outcomes rather than individual Performance Criteria. The new Unit specification allows the use of sampling of knowledge and/or skills. This has reduced the assessment loading for both candidates and centres. The Unit specifications detail exactly what the evidence requirements and assessment procedures are for each assessment event and assessment exemplars have been provided for exemplification. Assessment exemplars are accessible via the secure section on SQAs website. SQA Co-ordinators in centres have details of how to access these.

A separate document has been produced entitled 'Assessment Summary' which provides an overview of the Unit assessments within the qualifications, the document is available on the HN Hospitality page of SQAs website (www.sqa.org.uk/HN).

6.3 Reassessment

The way that centres reassess candidates is integral to the way that they manage assessment as a whole and as such, will be subject to internal verification. In order to ensure that the assessment process is as holistic as possible and that assessors are able to effectively judge candidates' performance in the outcome or Unit as a whole, it may not always be possible to reassess only those parts of the performance in which candidates have not satisfactorily demonstrated competence. Scenarios where candidates may require to re-do the whole assessment include:

- assessment which test knowledge and other cognitive skills and where it may not be possible to extract some of the items for reassessment
- where parts of several outcomes are involved
- where a project has been designed as an integrated assessment and where there is a requirement to complete the project as a single complex task

Candidates may require to do only part of an assessment where their evidence has been generated over a period of time and/or a discrete part of the Unit, such as an outcome, has been assessed originally.

6.3.1 Eligibility for reassessment

Candidates who have not satisfactorily demonstrated their attainment of knowledge and/or skills and/or competence in the whole or only part of an assessment may be considered for re-assessment.

6.3.2 Developing alternative assessments

The design of the original assessments inform the reassessment process to a large extent, as these determine the type of assessment instruments used and the purpose of the assessment. Normally, centres build up banks of assessments which can be used in whole or part for reassessment purposes.

Assessment writers should refer to the Unit specification when developing an alternative assessment and ensure that it is of equal demand to the original assessment and that it covers all necessary criteria – for example Core Skill achievement. Where candidates have not provided satisfactory evidence for knowledge and/or skill items which have been sampled, they would normally be reassessed on a different sample.

6.3.3 Reassessment of Graded Units

Re-assessment of a project-based Graded Unit would normally be based on an alternative assessment task. For the latter, centres would be encouraged to set the parameters at the start of the project class giving details of the draft submission date and final submission date. The overall grade is derived from the total number of marks across all the sections. The Conditions of Assessment section on the Graded Unit specification and the assessment exemplar gives additional guidance.

6.4 Assessment verification

All instruments of assessment used within these qualifications should be internally moderated, including exemplar material provided, using the appropriate policy within the centre and the guidelines set by SQA. This will ensure the validity and reliability of the instruments of assessment used within the centre.

External verification will be carried out by SQA to ensure that internal assessment is within the national guidelines for these qualifications.

For further information on internal and external verification refer to the *SQA Guide to Assessment and Quality Assurance for College of Further Education, August 2003, publication code AA0841/3*.

6.4.1 Prior verification of Unit assessments

SQA will produce Assessment Exemplars for high uptake Units including graded Units and these can normally be used as instruments of assessment provided that centres ensure the integrity of the assessment in the first and subsequent years of use and between centres. These can be downloaded from our secure website and we anticipate that centres will, from now on, make full use of them. However, if centres wish to amend these exemplars or create their own assessment instruments you may wish to have these instruments prior moderated before use. While it is not mandatory that prior verification takes place, we strongly recommend that centres do take advantage of this service with any new instruments of assessment particularly graded Units that are devised.

6.5 Guidance on the format and style of Unit specifications

The Unit specification used within the new qualifications has changed in style and format. Some Units used in the framework in the previous format. All such Units have been levelled against the SCQF level descriptor. They may include Performance Criteria and range statements. In addition where a merit statement is shown in the Unit specification this should be ignored as this does not apply to the new framework.

These Units will be replaced with revised updated Unit specifications when they are revised as part of the 'originating' award in which they were developed.

6.6 Assessment integration opportunities

Within each Unit specification the section ‘Guidance on delivery and assessment’ details ways to integrate Units and/or details the sequence of delivery in the HNC or HND. The table below indicates a few examples of how assessment could be integrated across Units.

Unit title	Integration opportunity
Alcoholic Beverages (DL3E 34) Outcome 3	Food and Beverage Service (DL3G 34)
Hospitality Supervision (DL3X 34) Outcomes 2 and 3	Practical Units e.g. Food and Beverage Service, (DL3G 34) Production Cookery: Hot/Cold Kitchen, (DL47 34/DL46 34) Production Cookery Sweets and Desserts, (DL48 34)
Food Classification and Purchase (DL3H 34) Outcomes 2 and 3	Production Cookery: all Units, and Hospitality Financial and Control Systems (DL3T 34)
Licensed Premises Operations (DL41 34) Outcomes 3 and 4	Food and Beverage Service – outcome 3 (DL3G 34) Hospitality Financial & Control Systems, Outcome 4 (DL3T 34)

6.7 Open learning

Open learning is currently operated as a delivery mode on the existing awards. The HNC/D include a sufficient number of Units which are suitable although some attendance at a centre would be desirable unless the candidate is able to provide video evidence of oral and group activity or access to interactive media. The practical nature of some of the Units could be difficult to undertake on an open learning basis. Flexible part time study with open delivery however, is a practical option where a candidate is in employment.

6.8 Candidates with additional support needs

These qualifications are intended to ensure that there are no artificial barriers to learning or assessment. The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering alternative Outcomes for Units. For information on these, please refer to the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs.* (Sept 04, Publication code: BA2399)

6.9 Credit transfer arrangements

For existing candidates the following credit transfer guidance is provided:

Candidates may be given credit transfer between HNC/HND Units (developed using 1988 design principles) and the new HN Units (developed using 2003 design principles).

A candidate who is transferring, from an award in the same subject area, with a 12 credit HNC (or having completed the 15 credits necessary for the first part of a HND) should:

- achieve a graded Unit(s) of 16 SCQF points at level 8.
- be given opportunities to develop Core Skills.
- be given credit for the Units achieved in the previous award.
- achieve the mandatory Units in this award
- obtain the remaining SCQF credit points required at the SCQF level to gain the award

Credit transfer can be given where there is broad equivalence between the subject related content of the Unit (or combination of Units). Candidates who are given credit transfer between current HNC/HND Units and the new HN Units must still satisfy all other conditions of the award of the new principles HNC/HND including the mandatory Units and the correct number of credits at the correct SCQF level. The table on the following page details the credit transfer arrangements from old to new Units.

For further information on transitional frameworks for Hospitality please refer to **Appendix 1** of this Arrangements Document. The transitional framework can be used to facilitate credit transfer arrangements for candidates who have completed one of the following old HNCs or the first year of the old HND.

G0LC 15 Hospitality (HNC)
G0LE 15 Front Office (HNC)
G0LB 15 Licensed House Operations (HNC)
G1X6 16 Hospitality Management (HND)

The Appendix can be downloaded separately from the Arrangements Document on the HN subject page. There is currently only a transition framework in place for Hospitality.

Credit transfer – HN Hospitality and Professional Cookery Units

Title New Unit	Title Old Unit	Credit transfer conditions
Hospitality Industry – DL 3V 34	Role of Hospitality Industry within the Economy – A77H 04 Marketing and Selling in the Hospitality Industry – A78N 04	Both Units required for full transfer
Hospitality Supervision – DL3X 34	Supervision and Human Resource Organisation – A77V 04 Training Skills – A78F 04 Customer Care – A619 04	All Units required for full transfer
Hospitality Financial and Control Systems – DL3T 34	Control Systems for the Hospitality Industry – A781 04	Full transfer
Food Hygiene Intermediate – DC0V 34	Food Hygiene – D5A1 04	Full transfer
Food and Beverage Service DL3G 34	Food and Beverage Service – A78K 04	Full transfer
Food Production Processes – DL3K 34	Food Production Process – A77S 04	Full transfer
Accommodation Servicing – DL3D 34	Organisation of Accommodation Servicing – A77K 04	Full transfer
Hospitality Front Office Procedures 1 – DL3N 34	Front Office Procedures for the Hospitality Industry – A780 04	Full transfer
Hospitality Front Office Procedures 2 – DL3P 34	Hospitality Reception Operations – A787 04	Full transfer
Licensed Premises Operation – DL41 34	Bar and Cellar Operations – A78D 04	Full transfer
Alcoholic Beverages – DL3E 34	Wines and Spirits – A783 04	Full transfer
Food Preparation for the Licensed Trade – DL3J34	Food Preparation for the Licensed Trade – A77R 04	Full transfer
Food Classification and Purchase – DL3H 34	Food Classification and Purchase - A77Y 04	Full transfer
Production Cookery: Hot Kitchen – DL47 34	Production Cookery: Hot Kitchen – A77J 04	Full transfer
Production Cookery: Cold Kitchen – DL46 34	Production Cookery: Cold Kitchen – A77N 04	Full transfer
Production Cookery: Sweets and Desserts - DL48 34	Production Cookery: Sweets and Desserts - A77X 04	Full transfer
Patisserie - DL45 34	New	n/a

Specialised Patisserie – DL49 34	Chocolate and Chocolate Products – A77E 04 Pastillage and Marzipan - A77F 04 Pulled and Blown Sugar Work – A77G 04	All 3 Units required for full transfer. Credit given for Units held in the relevant area.
Specialised Patisserie: Advanced DL42 35	Chocolate and Chocolate Products Pastillage and Marzipan Pulled and Blown Sugar Work	All 3 Units required for full transfer. Credit given for Units held in the relevant area.
Fermented Patisserie Products – DL3F 34	Fermented Products – A178 04	Full transfer
Pastry - DL44 34	Pastry Products – A77W 04	Full transfer
Integrated Production Cookery - DL3Y 34	New	n/a
Management of Human Resources In Hospitality 1–F1F7 34	Human Resource Management in the Hospitality 1 - A78C 04	Full transfer
Management of Human Resources In Hospitality 2–F1HF 34	Human Resource Management in the Hospitality 2 – A78J 04	Full transfer
Management of Food and Beverage Operations – DL43 35	Management of Food and Beverage Operations – A78E 04	Full transfer
Managing Hospitality Organisations 1 – DL4L 34	Organisational Behaviour in the Hospitality Industry – A78H 04	Full transfer
Managing Hospitality Organisations 2 – DL4M 34	Management Concepts for the Hospitality Industry – A785 05	Full transfer
Hospitality Financial Accounting – DL3R 34	Financial Accounting for the Hospitality Industry – A782 04	Full transfer
Hospitality Management Accounting – DL3W 35	Management Accounting for the Hospitality Industry – A89G 04	Additional assessment required for outcome 1
Managing Financial Resources in Hospitality – DL3A 35	Management Accounting for the Hospitality Industry	Full transfer
Accommodation Management – DL3C 35	Accommodation Management - A77M 04	Full transfer
Kitchen Planning and Design - DL40 35	Kitchen Planning and Design – A77L 04	Full transfer
Gastronomy - DL3M 35	Planning, Developing and Marketing the Menu - A77T 04	No transfer
Food Service for Food Production Personnel - DL3L 34	Food Service for Food Production Personnel – A78A 04	Full transfer

Appendix 1 Core Skills Development and Signposting

The following Units are automatically certificated for Core Skills:

Unit Title	Unit Code	Core Skills Certificated
Information Technology: Applications Software 1	D75X 34	Using Information Technology at SCQF 6
Using Software Applications Packages	D85F 34	Using Information Technology at SCQF 6
Developing the Individual Within a Team	DF45 34	Working with Others at SCQF 6
HNC Professional Cookery Graded Unit 1	DK0D 34	Problem Solving at SCQF 5
HNC Hospitality Graded Unit 1	DK0C 34	Problem Solving at SCQF 5
HND Professional Cookery Graded Unit 2	DL4G 35	Problem Solving at SCQF 6
HND Hospitality Graded Unit 2	DL4K 35	Problem Solving at SCQF 6
Management of Food and Beverage Operations	DL43 35	Problem Solving at SCQF 6

The table below details where there are opportunities for developing Core Skills within Hospitality and Professional Cookery Units and some optional Units in the frameworks.

Unit No	Unit Name	Written Comms Reading	Written Comms Writing	Oral Comms	Using Graphical Info	Using Number	Using IT	Problem Solving – CT	Problem Solving – P&O	Problem Solving – R&E	WVO
DL3X 34	Hospitality Supervision			√				√	√	√	√
DL3V 34	Hospitality Industry	√	√								√
DL3T 34	Hospitality: Financial and Control System				√	√	√	√			
DC0V 34	Food Hygiene	√	√					√			
DL3G 34	Food and Beverage Service			√							√
DL3H 34	Food Classification and Purchase	√	√		√		√				
DL47 34	Production Cookery :Hot Kitchen			√		√			√		√
DL46 34	Production Cookery: Cold Kitchen			√		√			√		√
DL48 34	Production Cookery: Sweets and Desserts			√		√			√		√
DL3K 34	Food Production Processes			√		√			√		√
DL3D 34	Accommodation Servicing	√	√				√	√	√	√	
DL3N 34	Hospitality Front Office Procedures 1	√	√		√	√	√	√			
DL3P 34	Hospitality Front Office Procedures 2	√	√		√	√	√	√			
DL3R 34	Hospitality Financial Accounting				√	√	√	√			
DL3W 35	Hospitality Management Accounting				√	√	√	√			
DL43 35	Management of Food and Beverage Operations		√	√				√	√	√	√
DL3C 35	Accommodation Management	√	√				√		√		
DL4L 34	Managing Hospitality Organisations 1		√				√	√		√	
DL4M 34	Managing Hospitality Organisations 2		√				√	√		√	

DL3A 35	Managing Financial Resources in Hospitality				√	√		√			
DL40 35	Kitchen Planning and Design	√	√							√	
DL3M 35	Gastronomy			√		√			√		√
DL45 34	Patisserie			√					√		√
DL3Y 34	Integrated Production Cookery			√					√		√
DL3F 34	Fermented Patisserie Products			√					√		√
DL49 34	Specialised Patisserie			√					√		√
DL42 35	Specialised Patisserie: Advanced			√					√		√
DL44 34	Pastry			√					√		√
DL3E 34	Alcoholic Beverages	√	√				√				
DL41 34	Licensed Premises Operations	√	√				√	√			
DF45 34	DWIT			√							√
DJ42 34	Creating a culture of customer care							√	√	√	
D75X 34	IT: AS1				√		√				
D85F 34	USAP						√				
DE3A 34	Economic Issues: An Intro				√	√					
DK04 35	AMP in T&T				√						