Opening the door on student learning: using artefacts to explore pharmacy students' learning practices

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School of Education
University of Stirling

Ruth MacIntosh Edwards
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Abstract

Pharmacy as a profession is on a path of significant change with many external and internal influences on the nature and conceptions of professional practice and the diverse and changing nature of this knowledge in turn creates a challenge for pharmacy educators. Conceptual changes to pharmacy knowledge and practice have profound pedagogical implications for how pharmacy education will change over the next few years.

This study makes an original contribution to knowledge in pharmacy education, both in terms of the methodology used (the use of artefacts to explore learning with pharmacy students and the use of theory from anthropology, fine art and literature from English medieval poetry to view the data) and also in terms of the findings.

The key findings of the study are that artefacts afford access to insight into pharmacy students' learning, and use of these identified a number of learning and assessment practices, particularly some normally un-noticed practices. Using fine art to view participants' assessment practices has allowed insight into their conceptions of assessment (as the summative written examination) and hence their views on feedback. In particular there was a strong affective dimension expressed in participants' accounts of their learning, which is often ignored in teaching, learning and assessment practices. Participants' learning is constructed through a 'meshwork' of interconnected and interwoven practices. The difficulties experienced by participants were explored and were found to be primarily

modal (relating to a particular way of thinking or practising) or ontological (relating to 'being' or 'becoming' as a pharmacy student or to their professional identity).

Recommendations for MPharm curriculum development at Robert Gordon University are discussed along with the implications for the wider professional community.

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1. Introduction

1.1 Rationale for the research

My professional practice is situated within the School of Pharmacy and Life Sciences at Robert Gordon University, Aberdeen where, at the start of this project, I was a Lecturer in Pharmacy Practice. Towards the end of writing the thesis, I took on the role of Senior Lecturer and Course Leader for the MPharm in Pharmacy, the undergraduate degree in pharmacy delivered by the School. My educational role involves both undergraduate and postgraduate pharmacy responsibilities delivered within my professional capacity as a registered pharmacist.

This research was stimulated by my passion for learning and for facilitating others in learning how to learn and a consequent desire to explore how pharmacy students learn. Alongside my personal motivation are contextual changes to both the profession of pharmacy and to higher education which have had, and will have, a significant impact on how pharmacy students are educated. The contours of the professional landscape in pharmacy are moving rapidly with changes happening to how pharmacists practice, how they are perceived by the public and by other health professionals and the professional knowledge that they possess. In reflecting on the relationship between pharmacy knowledge and professionalism, Waterfield (2010 p.1) argues that *'one of the key challenges for the profession is how to demonstrate the potential benefits of having pharmacists input their knowledge into patient care'* and that it

is the diverse and changing nature of this knowledge which in turn creates the challenge for pharmacy educators. Conceptual changes to pharmacy knowledge and practice are discussed later in this chapter (1.2.1) but these have profound pedagogical implications for how pharmacy education will change over the next few years. These new knowledge and practices bring new questions and problematics that require new and different research tools than have traditionally been used in pharmacy to answer them.

Initially during the early development phase of this study I knew that I wanted to research some aspect of pharmacy students' learning but was unable to articulate exactly what that aspect was; was it what students learned, how they learned, the processes they used or was it what they did with that learning? I was convinced, however that I wanted to try to understand whatever aspect I was researching from their perspective. This chapter will describe my journey towards articulating what it was I wanted to research and also locate the research in the policy, professional and research context.

Early on in my research journey, I decided that I wanted to use a visually creative way of collecting the data and realised that using artefacts in data collection had the potential to be both satisfying and stimulating to me, as well as innovative in the field of pharmacy educational research. My data collection method involved asking undergraduate pharmacy students to choose artefacts that represent learning for them and because of this I decided to use relevant personal artefacts throughout

this thesis to represent the themes presented. In addition, throughout the thesis I use the metaphors of 'windows' and 'doors' to depict what I felt was my position in looking in on students learning practices through a window or an open door. The use of metaphor is a growing area of theoretical inquiry within educational research and this will be explored further in Chapter 2.

The first of these personal artefacts is an email from a student that represents many of the ideas that I wished to explore when I started the research; how students often feel uncomfortable with new and different concepts, the affective dimension of learning and the process of learning new ideas. Several years ago I received the following email (Figure 1) (the student's name has been changed):

From: RACHEL ANDERSON
Sent: 09 December 2005 14:56
To: Ruth Edwards (pasre)
Subject: 3rd Year SPAP Essay

Hi Mrs Edwards

I'm having a wee mad panick that I'm going off track with my essay. I went to the discussion session and have looked at the essay website you gave us. Just wondered if I could come and see you for quick chat some point today? I'm doing essay 2 which I realise isn't the essay you supervised in the discussion but its more just checking my interpretation of the question. Thanks

Rachel Anderson
3rd year

Figure 1. Student email

I happened to be away from the University for a few days when the student sent the email but on my return I replied as follows (Figure 2):

From: Ruth Edwards (pasre)
Sent: 13 December 2005 15:14
To: RACHEL ANDERSON
Subject: RE: 3rd Year SPAP Essay

Hi Rachel
Apologies for the delay in replying but I have been away from RGU for a few days. I am really sorry but I don't think it would be appropriate for me to check your interpretation of the question as I was not involved in the brainstorm for that essay title i.e. you know more about it than I do!!! The reason we held the brainstorm was to try and ensure that everyone had the opportunity for the same level of guidance and that unless someone was REALLY struggling, that's all we would give to be fair.
If you were involved in the discussion then I'm sure you are not going off track so have confidence in your own thinking!!
Your essay tutor will be back on 9th Jan so if you are really still struggling at that point you could discuss with her but I appreciate you probably don't want to leave it until then.
I have attached the notes from the flipchart which I will be circulating to the rest of your group.
Sorry if that's not the "answer" you wanted!

Mrs E

<< File: Influenza brainstorm.doc >>

Figure 2. Student email (my reply)

To which the student replied (Figure 3):

From: RACHEL ANDERSON
Sent: 13 December 2005 15:38
To: Ruth Edwards (pasre)
Subject: RE: 3rd Year SPAP Essay

Hi Mrs Edwards

Thanks for the attachment, it reminded me of a couple of things. No worries panics passed me, I think I was just finding sieving out the right information from the research difficult. Thanks

Rachel.

Figure 3. Student email (student reply)

This series of correspondence represents how students often feel uncomfortable with new and different concepts, which in Rachel's case

resulted in an element of panic and her asking for help. Had I been in the office when the email arrived, I may have been tempted to meet with her to help relieve the anxiety expressed in the email. However that would have resulted in her not having the opportunity to work through her essay title and the associated anxieties for herself and therefore achieving not just an outline for her essay, but an important learning experience of sourcing information and distilling that into a coherent series of arguments. More importantly, I believe that Rachel will now recognise, when she feels similar anxieties in other circumstances, that she is capable of working through these by herself.

Perkins (1999) calls this phenomenon of discomfort when encountering new concepts 'troublesome knowledge' and the anxieties expressed by Rachel in her first email indicates the initial troublesome nature of this experience. Interestingly Barnett (2007 p.147) argues that students in higher education should be:

> *required to venture into new places, strange places, anxiety-provoking places. This is part of the point of higher education. If there was no anxiety, it is difficult to believe that we could be in the presence of a higher education.*

This idea of troublesome knowledge and anxiety-provoking places will be explored throughout this thesis.

Another key theme that I decided to explore in this thesis was assessment and feedback, in particular how this impacts on students' learning.

The role of assessment, particularly formative assessment, in the learning process is one which has been widely researched by many

researchers and documented by the influential Assessment Group at Kings College, London (Black and Wiliam 1998). Formative assessment and feedback on assessment have been identified as key components of the learning process and '*attention to formative assessment can lead to significant learning gains'* (Black and Wiliam 1998 p.17). Formative assessment and feedback have been recognised in Scottish national Higher Education (HE) policy as having an important impact on student learning (Quality Assurance Agency for Higher Education 2007a, Quality Assurance Agency for Higher Education 2007b). Like many Higher Education Institutions (HEI), at Robert Gordon University, where this research was conducted, there has been an institutional push to reduce student assessment load alongside a strategic review of using feedback in enhancing learning. As with most other institutions (Surridge 2009), students at Robert Gordon University, School of Pharmacy and Life Sciences have been less positive about 'Assessment and Feedback' than other aspects of their experience in their responses to the National Student Survey (NSS) (Robert Gordon University 2009). In Pharmacy specifically, all criteria in the 2009 survey were rated higher than the national average except the questions: *'Feedback on my work has been prompt'* (41% agree), *'I have received detailed comments on my work'* (55%) and *'Feedback on my work has helped me clarify things I did not understand'* (52%). This compares with an overall mean of 88% for all other questions and 94% responding that *'overall they were satisfied with the quality of the course'*. These data reflect the general trend in student evaluations where students have routinely evaluated assessment and feedback lower than other course-related aspects over a number of years

(Williams and Kane 2008). Academic staff within the School of Pharmacy and Life Sciences respond to these data with frustration and with comments like *'we give lots of feedback throughout the course'* and *'I give students detailed comments in their feedback'* which would indicate a mismatch in perceptions between staff and students. Carless (2006) compared academics' and students' perceptions of the feedback process and how these differed and raises the issue of feedback as a *'social process in which elements, such as discourse, power and emotion impact on how messages are interpreted*' (p.221) which will be interesting to explore with individual pharmacy students. A significant amount of resource in HE is also invested in staff time in providing feedback on assessments. Crisp (2007 p.571) questions whether it is *'worth the effort'* in her study of how feedback influences students' subsequent submission of assessable work. She concludes that, despite often ingrained organisational cultural assumptions that providing feedback should lead to improvements in students' work, there is limited support for the idea that students respond to feedback by making changes which are consistent with the intent of the feedback received. Sinclair and Cleland (2007) also explored whether medical students collected formative feedback on their degree essays and found that less than half the students collected their formative feedback with females more likely than males and higher achievers significantly more likely than lower achievers, to seek their feedback. They conclude that these medical students, particularly males and poor students may not use assessment feedback as a learning experience. This study will explore these issues further in the context of pharmacy education, investigating whether feedback

influences pharmacy students' learning and therefore by implication whether it is an effective use of staff time and effort.

In order to explain further the rationale for this project it is important to discuss the context within which the project took place.

1.2 The professional context

1.2.1 The profession of Pharmacy

Figure 4. Pharmacy (Damien Hirst, 1992)

Following on from my first artefact representing the provenance of this research, in order to represent the pharmacy context, I have chosen as my second artefact one artist's famous representation of pharmacy. *Pharmacy* by Damien Hirst shown in Figure 4 is a room-sized installation representing pharmacy owned by the Tate Gallery. This is an example of a collection of objects being used to portray something (a modern pharmacy) on a surface level but at the same time offering multiple representations on many different levels. Hirst uses the medicine cabinet in a number of his works of art and in *Pharmacy* he arranges the drugs on the shelves so that they offer a model of the body: those at the top are medicines for the head; in the middle are medications for the

stomach; those at the bottom treat ailments of the feet. He also uses four glass apothecary bottles filled with coloured liquids to represent the four elements: earth, air, fire and water. When I visited the installation, I was also struck by the slightly 'medicinal' smell created by bowls of honey positioned throughout the room; a sensual and emotional reaction to the piece which I was unable to experience by looking at a photograph.

In a commentary on Hirst's *Pharmacy*, Manchester (2009 p.1) argues that it:

> *could be seen as a representation of the multiple range of philosophies, theories and belief systems available as possible means of structuring and redeeming a life.*

Likewise different individuals' views of pharmacy as a profession may vary based on multiple philosophies, theories and belief systems. Pharmacy as a profession is on a path of significant change with many external and internal influences on the nature and conceptions of professional practice. There are a number of legislative and policy changes to practice which have happened recently and are on the horizon, for example mandatory continuing professional development (CPD) was implemented in 2005 and embedded in legislation in 2007 (*The Pharmacists and Pharmacy Technicians Order* 2007) and professional regulation underwent significant changes in 2010 which will be discussed in Chapter 1.2.2. Pharmacists are taking on new extended roles such as prescribing as part of the legislative changes ascribing prescribing rights to non-medical practitioners (Department of Health 2008) and this is changing the landscape in relation to pharmacy's

traditional social object (the medicine) with autonomy of decision making no longer resting solely with the physician. Historically the profession of pharmacy has had a technical or medicine focus similar to the way that Hirst represents pharmacy in his artwork. Over the past twenty years however, since the introduction of the concept of pharmaceutical care (Hepler and Strand 1990), there has been a paradigm shift towards a patient-centred focus with pharmacists involved in rational drug therapy (Mullan 2000) and spending much more time communicating with patients (Savage 1999) about their medicines than compounding them.

Pharmacy is a profession with a broad and diverse knowledge base ranging from natural science based subjects such as chemistry, physiology and pharmacology through to applied science such as pharmaceutics and pharmacogenomics to clinical and patient focused topics such as pharmaceutical care. The undergraduate curriculum also incorporates subjects such as legislation, ethics, public health and social and behavioural aspects of healthcare. Figure 5 lists the sciences of pharmacy (taken from a presentation on the research and the practice of pharmacy (Duggan 2010)) and represents the wide diversity of knowledge held by the profession.

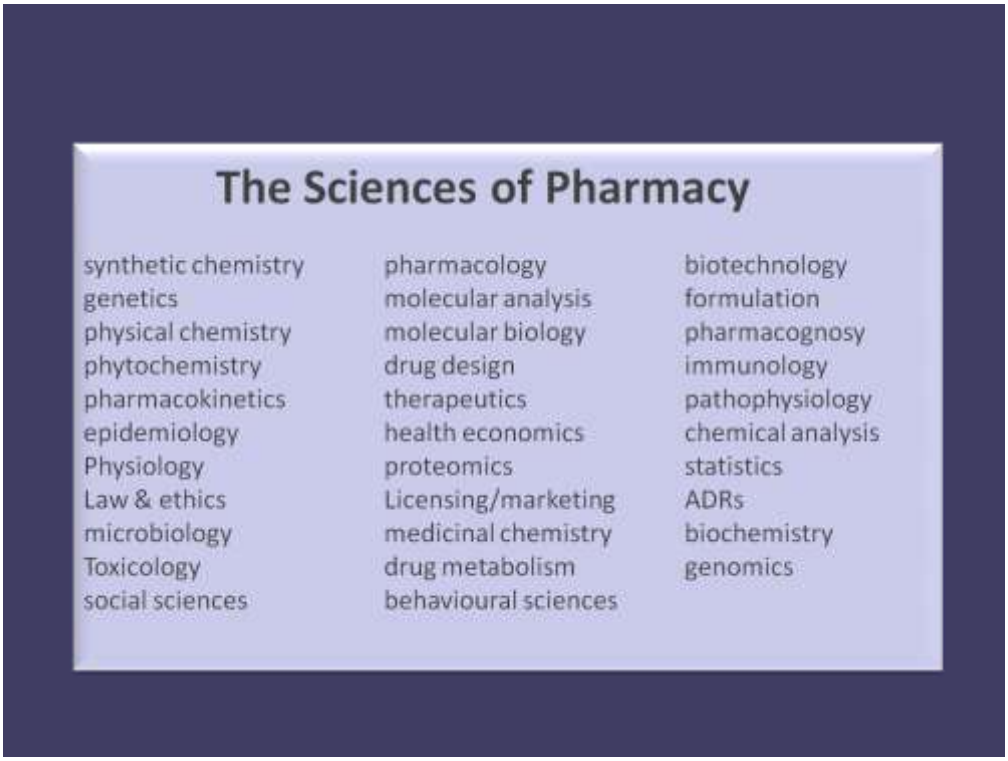


Figure 5. The Sciences of Pharmacy (Duggan, 2010)

Harding and Taylor (2004 p.146) argue that:

> *it is this complex, varied and integrated expert knowledge that qualifies* [pharmacists]*, and them alone, to make professional judgements relating to medicines.*

This diversity of knowledge in itself creates tension in terms of a shared professional identity, but also for the undergraduate pharmacy student resulting in both an interesting but often challenging curriculum. Students often find themselves more comfortable with some modules and subjects and quite uncomfortable with others. These struggles may be associated with students' epistemological perspective (Kaartinen-Koutaniemi and Lindblom-Ylänne 2008); those with a more positivistic worldview tend to be more comfortable with the hard sciences where there are often definitive answers and can be very uncomfortable with topics such as ethical dilemmas where things are not as 'black and white'.

Knowing how to integrate these diverse aspects of knowledge into professional practice is a challenge for pharmacy students and for those educating them and this will be explored further in this study.

1.2.2 Professional regulation and Pharmacy

The classic theory of professions, based on Talcott Parson's approach, views professions as fulfilling useful and necessary social functions centring on the professions' role in the structure of modern society (Morgall Traulsen and Bissell 2004). Pharmacy possesses many of the classic functional traits of a profession; a monopoly of practice, specialist knowledge, a lengthy period of training, an obligation of service and professional conduct that is regulated by the profession, however many have argued that pharmacy is not a true profession (Morgall Traulsen and Bissell 2004). Other authors have challenged this argument; Dingwall and Wilson (1995 cited in Morgall Traulsen and Bissell 2004) and Harding and Taylor (1997) argue that despite the commercial setting, pharmacy can still achieve professional status and that professional altruism and commercial interests are not necessarily in conflict.

Critical perspectives on the professions emerged in the 1960s with the focus on the power balance between professionals and their service users (Morgall Traulsen and Bissell 2004). The 'splendid isolation', that critical sociologists argued was a characteristic of professions, has been widely debated in the context of health professions in the wake of highly publicised incidents such as high mortality associated with children's heart surgery at the Bristol Royal Infirmary and the activities of general

practitioner and serial killer Harold Shipman. The report of the Bristol Royal Infirmary Inquiry (Bristol Royal Infirmary Inquiry 2001) was critical of regulation of the professionals involved and of the medical professionals' lack of communication with parents and with other professionals. Bottery (1998) describes a type of professional who sees themselves as master of the situation and who adopts a manipulative strategy which allows no real dialogue with the client. In Bristol, as a result of this lack of communication, *'mistrust [was] born [and] … cries for the curtailment of professional power and autonomy'* (Bottery 1998 p.169) came in the form of government intervention. This, along with other incidents and the Shipman Inquiry (The Shipman Inquiry 2004) contributed to the UK government responding with a wholesale review of professional regulation culminating in the government White Paper, *Trust, Assurance and Safety – The Regulation of Health Professionals in the 21st Century* (Department of Health 2007a). This White Paper had a major impact on the profession of pharmacy and as a result a subsequent impact on the education of pharmacists. More recently the Francis Report into profound failings of care at the Mid Staffordshire NHS Foundations Trust (Francis 2013), has also stimulated further questions about regulation of healthcare professionals.

For pharmacy there were specific structural changes proposed in the *Trust, Assurance and Safety*. The Royal Pharmaceutical Society of Great Britain (RPSGB) was at that time unique among professional bodies in that it was both the regulator and the professional body responsible for leading the pharmacy profession. The White Paper required the RPSGB

to separate its regulatory role from its system of professional and clinical leadership, allowing each distinct function to focus solely on its core role. The White Paper proposed formation of a General Pharmaceutical Council to perform the regulatory function with a 'body akin to a Royal College' providing the professional leadership stating that *'dual responsibility is no longer sustainable if the public are to be reassured that there is effective independent regulation of this role'* (Department of Health 2007a p.30). After a long period of consultation and development, on 27th September 2010, the General Pharmaceutical Council (GPhC) took over as the new regulator for pharmacy and the Royal Pharmaceutical Society of Great Britain transformed into the new professional leadership body for pharmacy (News Team 2010a).

Emerging from the critical perspectives on professionalism, the 'deprofessionalisation' theoretical approach became debated in the 1980s. Morgall Traulsen and Bissell (2004) describe Haug's argument that a narrowing of the 'knowledge gap' between the general public and the professional is influenced by societal trends towards egalitarianism and the higher level of education of the general public. In the introduction to the *Trust, Assurance and Safety* (Department of Health 2007a), written by the Chief Medical Officer for England, Liam Donaldson, reference is made to societal changes commensurate with Haug's (1973 cited in Morgall Traulsen and Bissell 2004) concept of deprofessionalisation *'where traditional social deference is increasingly being challenged by a better informed and more assertive public'* (Department of Health 2007a p.16). Donaldson also refers to

technological advances which have affected health care professionals' ability to intervene and which have had an impact on professionalism.

In researching this concept in pharmacy, Hibbert, Bissell and Ward (2002) found that consumers had a high perception of their own expertise in over-the-counter medicines and they assert that pharmacists need to be mindful of the antagonism between the knowledgeable consumer and themselves during the ongoing process of re-negotiating their professional role with consumers. Pharmacists may therefore increasingly need to '*move to being the expert in empowering clients to solve problems themselves, when they arise'* (Bottery 1998 p. 164) rather than being seen as the 'expert-professional' in medicines. The changing nature of the generation of knowledge about the use of medicines, may mean that the pharmacist can no longer be seen as the 'gatekeeper' of knowledge about medicines but needs to empower the patient, in the ethos of Bottery's (1998) 'humanistic education', to find their own meaning in their medicine use (Edwards 2011).

In relation to the education of health professionals, Donaldson goes on to argue in his introduction to the *Trust, Assurance and Safety* that:

> *our system of regulation ...needs to ensure that professional education adapts to this new context so that health professionals are properly prepared for the complexity they face when they enter their profession'* (Department of Health 2007a p.16).

Following the publication of *Trust, Assurance and Safety*, as part of the implementation and consultation process, the Department of Health commissioned a working party on professional regulation and leadership in pharmacy which reported to ministers in May 2007 and commented

that *'the structure of pharmacy education appears out of step, or subject to different mechanisms, when compared with other health professions'* (Department of Health 2007b). This was considered to be outwith the scope of the working party but the report stated that consideration should be given to this elsewhere if the pharmacy profession is to make its full contribution to clinical care. Significant changes were clearly ahead for pharmacy education at the time of commencing this research study and therefore it appeared to be an opportune time to conduct research into learning in pharmacy in order to inform policy development at course, institution and professional level.

1.2.3 Pharmacy education

Currently the only route to registration as a pharmacist in Great Britain involves completion of a four-year undergraduate masters (MPharm) degree which has been accredited by the pharmacy regulator followed by 1 year of pre-registration training including a summative registration assessment (General Pharmaceutical Council 2013). During the pre-registration year, trainees work under the supervision of an accredited pharmacist tutor and are no longer students. Responsibility for the trainee during their pre-registration year rests with the pharmacy regulator, the NHS and employers rather than the university where the student completed their MPharm degree.

As the nature of pharmacists' responsibilities change, so the nature of specialist knowledge needs to change and therefore the education of pharmacists needs to adapt. Pharmacy education has traditionally been

based in the natural sciences and within a technical paradigm; however an increasing emphasis on clinical skills and pharmaceutical care, alongside an increased need for inter-professional working and patient consultation skills, has required a reorientation of approaches to education. Droege (2003) argues that the practice of pharmaceutical care requires the pharmacist to be a reflective practitioner and that educating these reflective practitioners requires a different approach to teaching. Cipolle, Strand and Morley (2004 p.308) argue that the objective of a programme to educate practitioners of pharmaceutical care is *'the preparation of a health care practitioner who can contribute to society in a meaningful, measurable manner'.* Since the profession aspires to continue the shift in a pharmacist's contribution to patient care away from the mechanical and technical supply function associated with dispensing, Waterfield (2010) argues that this challenges pharmacy educators to design and deliver a curriculum that meets these aspirations. Mullan (2000 p.254) also asserts that this conceptual change in practice requires different professional responsibilities and hence development of students and trainees in taking *'direct professional responsibility for the quality of interventions'*. Mullan goes on to explain that the development and maintenance of new professional relationships with patients and other healthcare professionals may result in tension, disagreement and conflict leaving the pharmacist asking 'what should I do?'. 'Soft skills' such as ethical decision making and communication skills have therefore become as important within the pharmacy curriculum as the traditional clinical and pharmaceutical knowledge studied by pharmacists in previous generations. Recent publication of the

Francis Report into failings in care in Mid Staffordshire (Francis 2013), has stimulated considerable public attention on the care received by patients in the National Health Service, with calls for development of the skills, attitudes and values to provide 'compassionate care' to be an integral part of undergraduate healthcare education (Procter et al. 2013).

Higher Education institutions delivering pharmacy degrees have had to respond to these changes and for example, the School of Pharmacy at Robert Gordon University was among the first to include non-medical prescribing in the undergraduate curriculum. Traditional teaching methods such as the lecture are not effective in developing important clinical skills and many Schools of Pharmacy, including my own, have redesigned curricula to integrate clinical and 'soft' skills using experiential teaching (Stewart et al. 1999), student-centred teaching methods such as problem based learning (Hanning et al. 2002, Mackellar et al. 2005), portfolio-based learning (Ashcroft and Hall 2006a, Ashcroft and Hall 2006b) and development of reflective practice (Edwards et al. 2004, Edwards et al. 2009, Black and Plowright 2007).

Waterfield (2010 p.5) supports these changes and asserts that:

> *in order to develop practitioners who are socially aware and able to solve practical problems, there is an increasing place for problem-based learning and teaching.*

Alongside changing methods of curriculum delivery, there has also been a growing use of innovative assessment methods to assess skills (Stewart et al. 1999, Corbo et al. 2006, Bell, Edwards and Hutchinson 2002, Rutter 2002) and a focus on developing communication and consultation

skills (Cleland et al. 2007, James et al. 2001, Mackellar et al. 2007, Moody et al. 1999) to enable pharmacists to deliver a more patient-centred type of care.

In 2006, the pharmacy professional body at that time, the Royal Pharmaceutical Society of Great Britain (RPSGB), responded to the changing nature of pharmacy practice by announcing a *'root and branch review of pharmacy education policy'* (Royal Pharmaceutical Society of Great Britain 2006) and there appeared to be a significant culture shift away from being explicit primarily about the knowledge required to be a pharmacist, to acknowledging the knowledge, skills, attitudes and values required (Ambler 2006). Later in 2006, the RPSGB launched a consultation on the Principles of Pharmacy Education (News Team 2006) which concluded in 2007 with key themes being identified which the profession believed should underpin pharmacy education. These themes related to selection, curriculum, assessment, teaching, resources, quality and devolution and were underpinned by broad principles of proportionality, professionalism, people-centred and medicines-focused education and also of integration (Royal Pharmaceutical Society of Great Britain 2007a). These themes were developed by a working party into draft standards for pharmacy education with a move away from a prescriptive, detailed indicative syllabus to a graduate learning outcome based template for curriculum design. Consultation began on these standards in 2009, followed by public consultation in November 2010 after the formal inception of the new pharmacy regulator and finally in April 2011, new standards for initial education and training of

pharmacists with an outcome-focussed approach were approved by the newly formed General Pharmaceutical Council (News Team 2011, General Pharmaceutical Council 2011).

This reorientation of approach and subsequent new standards for curriculum design, have dramatically changed the professional landscape for pharmacy educators in the UK (Edwards 2011). Alongside these changes, other political discussions were taking place about the structure and funding of undergraduate pharmacy education.

In April 2008, another White Paper relevant to pharmacy in England was published. *Pharmacy in England: building on strengths - delivering the future* (Department of Health 2008) set out the direction for pharmacy services for the future. In particular the White Paper highlighted the Government's intention to build on the work started by the RPSGB to *'ensure that future pharmacists have the clinical, professional and leadership competencies to deliver the services of the future'* (p.90) by increasing the clinical content of undergraduate curricula.
The funding model for pharmacy in Great Britain is different to other health professional courses such as medicine and nursing where significant funding is allocated to the NHS for placement provision. Placements in pharmacy curricula are extremely limited and are often run on a 'good will' basis. When this study was commenced, placement provision accounted for around 6-8 days equivalent across the 4 years in Robert Gordon University. As the research continued, this provision

increased with work ongoing to continue to increase provision significantly.

In *Pharmacy in England* (2008 p.90), the Government committed to working with the profession, schools of pharmacy, the regulator and Higher Education Funding Council for England to plan *'meaningful clinical context and experience throughout the undergraduate programme'*, along with an appropriate funding framework to support this, and to explore whether integrating the undergraduate degree with the pre-registration year would be an appropriate way to achieve this. To achieve this end a Modernising Pharmacy Careers (MPC) Programme Board (Health Education England 2013) was set up to review pre-qualification and post-qualification pharmacy education and training. Unfortunately for pharmacy, the global economic crisis followed shortly after publication of *Pharmacy in England* with subsequent announcements of cuts in funding to higher education (Shepherd 2010). At the time of writing, the situation is still uncertain as to whether a case for extra funding to enable an increase in placement and clinical teaching will be successful. Professional discussions have continued in England under the assumption that a five-year integrated degree will become a reality and in 2012, a cap on pharmacy student numbers in England was announced (Gibney 2012).

Because health and education are devolved functions, the developments proposed in *Pharmacy in England* do not apply in Scotland. In Scotland there are two Schools of Pharmacy and the pre-registration year training is administered and delivered centrally through NHS Education for

Scotland (NES), a situation which is unique to Scotland. Any changes to the structure and funding of pharmacy education in England will have an impact on Scotland, both in terms of being able to recruit to the two Schools and in terms of availability of pre-registration places for graduates. In 2010 there were 170 pre-registration places in Scotland compared to almost 300 graduates from the two Schools; those that did not stay in Scotland gained places elsewhere in the UK. The two Schools, NES, pre-registration employers and Scottish Government began discussions in 2009 about the direction of pharmacy education in Scotland and these discussions are continuing at the time of writing this thesis.

1.2.4 Pharmacy education at Robert Gordon University

Robert Gordon University Aberdeen, where this research was conducted, is a 'post-92' university with a strong history of vocational education beginning in 1668. In 1898, the College assumed responsibility for providing training for apprentice apothecaries, chemists and druggists and through to the present day, vocational education has been a founding tradition of the institution. The university was ranked top UK University for graduate employment in 2012 (Robert Gordon University 2012) and attributes this to its relationship with employers. Teaching and learning has always been given high priority at Robert Gordon University and, as a result of this strong vocational focus, the development of skills for professional learning and practice alongside the underpinning knowledge has always been an important underpinning educational philosophy.

The MPharm curriculum at Robert Gordon University has a patient-centred focus which aims to prepare graduates as *'confident and competent professional practitioners committed to lifelong learning and continuing professional development'* (Robert Gordon University 2013 p.3) This is achieved through experiential learning designed to integrate a sound scientific underpinning with clinical and professional practice, with a strong focus on the patient and on developing the skills, values and attitudes required for professional practice. In order to become lifelong learners, learning how to learn is vital for practitioners who need to equip themselves with knowledge and skills throughout their career and there is an expectation that learning these skills will take place during their time in higher education. Boud and Falchikov (2006 p.399) assert that HE should *'equip students to learn beyond the academy once the infrastructure of teachers, courses and formal assessment is no longer available'* and exploring students' perspectives on how the MPharm course at RGU achieves this will be an important aspect of this study.

Harding and Taylor (2002 p.396) argue that socialisation, '*the process through which people acquire the skills, attitudes and values to enable them to conform to the expectations of those around them'* is part of the education and pre-registration process of becoming a pharmacist and exploring the effect of this enculturation process is important in attempting to understand how pharmacy students learn.

It has also been argued that learning and knowledge is created within a social context and that the social systems in which a learner is embedded will dominate much of his learning; Brown (1997) describes HE as a developmental social process. Nixon *et al.* (2001), in their discussion of complex overlapping changes that are affecting HE, also highlight Entwistle's (1992 cited in Nixon et al. 2001) argument that there has been a shift in emphasis to 'self-regulated learning' and on students becoming increasingly aware of their own studying and thinking processes accompanied by a shift towards 'formative' assessment procedures (Opacic 1994 cited in Nixon et al. 2001).

The current discourse around student-centred learning espouses empowering the student as an autonomous learner and defining their own goals for learning; however, this is still set against a context of university social structure in which most of the power rests with the academic. It will therefore be interesting to explore how students make sense of this particular environment during their studies and perhaps explore the level of autonomy they feel in being able to direct this developmental social process.

Robert Gordon University has been subject to similar institutional change over recent years as most other HEIs. King (2000) discusses several examples of how Australian HEIs have had to respond to political reform, funding changes, corporatisation of university systems and cultures, globalisation, IT, workforce patterns, social and economic inequalities and an increasingly competitive market. Robert Gordon University has

responded to these pressures in similar ways to others with new organisational structures, new learning methods embraced and new delivery methods being developed throughout the curricula, including pharmacy, and these changes inevitably have had an impact on the student learning experience. Alongside these changes, an underpinning ethos of encouraging pedagogic research to evaluate developments has been fostered in the institution and support to complete this thesis is an example of this.

1.3 My own background

Chapter 1.1 and 1.2 provide the rationale and the contextual reasons why this study has been conducted. However, they do not explain the process of reaching the particular research questions I was keen to answer with the study. Before proceeding with the study, it is useful to begin with explicit acknowledgement of the preconceptions, assumptions and philosophy that have influenced my thinking on the design and conduct of the research.

1.3.1 My professional journey

My early professional experiences were as a community pharmacist. After practising for 6 years, my passion for education led me into a Teacher-Practitioner post (split between teaching and practice) and subsequently a full-time academic position as a Lecturer in Pharmacy Practice, followed latterly by a Senior Lecturer and Course Leader position.

My perspectives on learning are heavily influenced by my professional experience as a community pharmacist and my beliefs about the importance of skills, such as communication, that I used in practice and my values of respect for others. I am aware that my professional perspective as a pharmacist also influences how I carry out research into learning. Harding and Taylor (2002 p.396) argue that the socialisation process of becoming a pharmacist leads to the *'creation of implicit assumptions or self-evident truths'*. They go on to describe how *'adoption of a sociological informed perspective challenges established practices and assumptions'* (p.396) and I would argue further that challenging assumptions is part of the process of sociological and educational research. I am acutely aware that implicit professional assumptions may lead to restricted thinking; 'we do it this way because that's the way we have always done it' and I always aim to challenge these professional assumptions.

My approach as an educator has also been to question educational assumptions and particularly in designing a student-centred curriculum. I believe it is dangerous to simply accept teaching, learning and assessment methods 'just because this is the way it has always been done'. For example I have been heavily involved in adopting and developing innovative assessment methods (such as Objective Structured Clinical Examinations, OSCEs) in pharmacy education (Bell, Edwards and Hutchinson 2002) and in developing reflective practice in pharmacy (Edwards et al. 2009, Edwards and Cunningham 2009) as I believe it is important for students to develop and demonstrate the skills and

attitudes required for professional practice alongside their underpinning knowledge.

My perspective on learning is also influenced by my experience of education, both as an educator and as a learner. My early experiences of higher education as an undergraduate were enjoyable from a social perspective but were a rather negative learning experience. From my current understanding of learning and learning styles, I am a very active learner who benefits from learning by speaking with others and by talking through problems (Honey and Mumford 1992). However as a student, I was never taught to reflect on my own strengths and weaknesses and my style of learning, either at school or at university and hence believed that the 'proper' way to study was the traditional approach of going to the library and reading copious text-books. I hated this approach and it was a particularly ineffective way of learning for me. If I had been stimulated to consider other ways of studying and learning, I believe I would have performed considerably better as an undergraduate. As a result of these experiences I am passionate about helping students to develop an understanding of how they learn and have designed teaching in which I challenge first year pharmacy students to reflect on their own learning and learning styles. I recognise that being passionate about this may *'evoke my subjectivity'* to use Peshkin's (1988) phrase and have made an attempt to remain aware of this throughout my research.

1.3.2 My research journey through the EdD taught modules

> *These tests* [e.g. knowing the 'correct' name for a pub] *are designed to exclude others from the discourse - just as the word discourse itself is designed to do. These words are intended to say to people: this is a group thing. If you don't understand what we are talking about, you're not a member of the group.*
> (McCall Smith 2005 p.3)

This extract from a conversation between two of McCall Smith's characters in one of his Scotland Street novels is a personal artefact that represents how I felt at the start of my professional doctorate journey; a feeling which exemplified that I was not a member of the 'educational research' group. I had little understanding of the language used in educational discourse and indeed the word discourse itself was one which did not form part of my existing professional repertoire. My progression through the four taught modules of the EdD led to a growing understanding and awareness of both the language of educational research and of the methodological issues I needed to consider when designing my educational research project.

I was challenged during the first module by reading Peshkin (1988) to be aware of my own subjectivity and to have an increased awareness of my own professional stance. Peshkin discusses the different 'I's that affect subjectivity in research and argues that subjectivity is inevitable and that researchers should systematically seek out their own subjectivity while the research is actively in progress and be aware of how subjectivity may be shaping inquiry and outcomes. Locke, Spirduso and Silverman (2004 p.217) also assert that:

> *it is absolutely essential that* [the researcher] *recognises their own subjectivity and monitors how that is functioning in the research context.*

Subjectivity as a positive attribute was a new concept to me having come from an educational background of scientific or positivistic research where subjectivity is viewed as bias or a negative trait. This area of self-reflection was one that I developed as my research progressed as I aspired to develop Peshkin's skill of systematically seeking out my own subjectivity, working on my 'self' allowing the research process and the collection and analysis of the data to establish and constitute a different relationship to myself as subject (Foucault 1997).

Exploring different epistemologies and theoretical research perspectives throughout the second module, or the '*-ologies, -isms and –ists'* module as Edwards has described it (2006 p.7) enabled me to feel better able to articulate my research perspective. This process of reflection has been an ongoing one throughout my doctoral studies and it was not always easy, with familiar philosophical perspectives (e.g. from my positivistic training) being reconsidered from a more knowledgeable position; I discovered why I was uncomfortable with some of the positivistic research which I have been involved with in the past. During module two I also felt less comfortable with other new (to me) perspectives such as post-modernism which I perceived as being at the opposite end of a research continuum to positivism and also that of critical inquiry, neither of which I felt sat well with my 'world-view'. At the same time, however, I knew that I did not want to completely abandon the *'realism of the physical and social sciences'* (Pring 2004 p.51) and as a result I perceived myself to be somewhere in the middle, which at the time felt a bit like 'sitting on the fence'. However I realised that the types of research questions which

interest me, around meaning and understanding of what is important to people, did fit within the interpretive theoretical perspective. Usher's (1996) link between hermeneutics and enlightenment, understanding and communication, three of my key personal values, reinforced my belief that my world-view is constructivist.

I learned specific lessons for my own research from critically reviewing papers for module two which included considering and attempting to foreground the impact of culture, values, discourses and social structures on my research and to avoid making sweeping generalisations based on unsubstantiated conclusions. I was reminded by Hart (1998 p.50) that it is my *'stance on key methodological questions that shapes the character of [my] research study'* and was challenged by the comparison between some authors' lack of awareness of their stance and other's explicit positioning of theirs to ensure I try to follow the latter's example in my own research.

Whilst considering the impact of policy on professional practice in pharmacy education during the third module I felt that I started to develop a better understanding of the political, social and ethical implications of the impact of my practice. I felt, having reflected inwards towards a critical examination of the values underpinning my professional practice (Bottery 1998) and reflected outwards towards an understanding of myself in relation to the institutions and society within which my practice is located that I was better prepared to understand both myself, the *'forces ranged against* [me], *and how to respond to these'* and, most

importantly for my research, felt better able to *'locate my practice within a wider picture of social and political issues'* (Bottery 1998 p.170).

Reading texts for module three re-emphasised that my frame of ideas had been largely apolitical to date, partly due to a lack of interest in government politics. I came to realise that if I was to conduct effective and meaningful educational research, I had to develop a better awareness of the policy and political context in which my research is located.

My research ideas when I started the EdD centred on reflective practice but as I progressed through modules one and two, my interests broadened to general transferable skills. As I became familiar with the literature on transferable skills, I realised that much of the debate around whether skills are truly transferable between contexts is also focussed on individual performance. In module three, I was challenged by reading Boreham (2004) to consider how my own values may, and arguably should, influence my choice of research topic. The argument that the 'skills agenda' stems from an ideological shift to societal individualism rooted in Conservative government policies, was one that firstly highlighted for me my lack of political understanding and secondly made me realise that I did not wish to contribute to a body of knowledge which was grounded in an ideology (individualism) which conflicts with my orientation towards altruism or collectivism. During module three my research ideas evolved to focus on the learning process, from an

interpretivist perspective encompassing students' perceptions of the role of assessment in the learning process.

I found reaching a decision about a title and defining the research question a challenging process during module four. The search for a research question was for me like Lee's (2002 p.19) *'hunting a wild and elusive animal'* although the *'emergent fuzzy beastie'* (p.24) that I found felt more warm and cuddly than the long-toothed leviathan I imagined I was pursuing when I started. During module four, I piloted the idea of using artefacts with students to explore their learning and asked two final year students whom I knew well to be my 'guinea pigs'. This experience was successful and I therefore became convinced that I would use this method in conducting my project.

I believe that the research presented in this thesis is unique within pharmacy education and makes an original contribution to the field of knowledge. In keeping with the ethos of interpretivistic research, I will not be attempting to generalise but instead to present data about the way human beings (Robert Gordon University pharmacy students) progressively construct meanings about the world (and their learning) in their lives (Scott 2000).

Lee (2002) argues that it is important for an individual to select a research area that has deep meaning for themself; learning and helping others to learn is something I am passionate about. I also believed that taking an interpretivist approach to researching learning would open up

avenues of interest that would maintain my enthusiasm throughout the following years of the study.

1.4 Conclusion and structure of this thesis

In this chapter I have explored the policy and professional context in which this study is located, identifying both the changing nature of the practice of pharmacy and the education of those training to be pharmacists and by implication, the many challenges for both students and educators. I have reflected on my own personal professional journey and how this has influenced the study design. My continued journey throughout research epistemologies will be discussed further in Chapter 3.

In Chapter 2, I set the study in the context of the published literature and explore the theoretical and empirical literature that has informed the project using a number of metaphors of learning to structure the analysis.

In Chapter 3, I discuss underpinning methodology and epistemology and some of my struggles in reaching a final conceptual theoretical framework, before going on to describe the specifics of methods used and ethical issues which were taken into account in conducting the project.

Chapters 4, 5 and 6 form the body of the thesis. Chapter 4 focuses on the artefacts that participants chose and what these represented for them and concludes that this methodology has afforded an in-depth view

of pharmacy students' learning practices. These practices are complex and interwoven in a 'meshwork' (Ingold 2011) of learning and many of them are un-noticed in the existing literature and teaching, learning and assessment practices.

Chapter 5 presents data relating to assessment using art as an alternative lens through which to view this type of data. It concludes that, like participants' learning practices, their assessment practices are complex and influenced by a variety of issues. By bringing the unexpected to the foreground and diverting attention away from the obvious, echoing Bonnard's way of painting, has allowed illumination of participants' assessment practices and understandings. The affective dimension of learning was found to be significant for these participants.

Chapter 6 considers the struggles that participants articulated and relates these to Steiner's (1978) categories of difficulty, concluding that participants mainly struggled with modal difficulties (relating to a particular way of thinking and practising) or ontological difficulties (relating to 'being' or 'becoming').

Chapter 7 focuses on pulling together the complex meshwork of artefacts, theories, findings and ideas that have emerged through conducting this research and considers the impact of the research and next steps.

Given the focus on artefacts in this study, it is somewhat ironic that this thesis, concerned with the artefacts of others, has in itself taken the shape of a personal artefact.

2. Literature review

> *To learn is to improvise a movement along a way of life* (Ingold 2010).

The current literature on understanding student learning is wide and diverse, written from a number of different philosophical perspectives. Fenwick (2010 p.106) explains that the term learning:

> *has come to be applied to a vast range of processes from information transmission to individual development to emancipatory transformation [and that] there is no unitary definition that can adequately represent the multiple and contested perspectives.*

Hodkinson, Biesta and James (2008) give an interesting critical account of the body of literature on learning. They describe the cognitive versus situated learning debate, the contrast between learning as acquisition or learning as participation (Sfard 1998), and that authors tend to sit within one 'camp' unable to focus equally on the individual and the situation. Edwards (2006 p.10) claims that this contrast between acquisition and participation is *'based on a false binary of being and having, when the form that one takes inevitably is dependent on the other'*. Hodkinson, Biesta and James (2008 p.32) go on to describe the three main dualisms that most theories of learning do not attempt to resolve; that of *'the [Cartesian] splitting of mind and body, the division between the individual and the social, and the split between structure and agency'* resulting in a *'different and partial version of what learning is'* (p.33). They assert that there are four important limitations in the literature on student learning and that no current theory of learning overcomes all of them:

> *individual learning is not always understood as embodied and social (p.31), individual learning is decontextualised (p.32), learning theory often fails to fully incorporate wider social and institutional structures (p.32)* [and that] *learning theory often fails to incorporate the significance of power (p.32).*

They go on to argue that *'there is no reason why individual learning cannot be addressed from within a broadly situated or socio-cultural perspective'* (Hodkinson, Biesta and James 2008 p.30). This study has focussed on the learning of individual pharmacy students but, as will be discussed further in Chapter 3.1.1, has attempted to take account of and challenge some of the dualisms that exist in the current literature around student learning, in particular around learning in pharmacy.

There is limited literature on learning in the context of pharmacy undergraduate students and much of it, is underpinned by a single perspective or dualism such as learning as transmission or cognitive development, for example Peeters (2011) or individual skills development, for example Langley and Aheer (2010). Educational research in pharmacy is a relatively new discipline and is only conducted by a limited number of members of a small profession. Most pharmacy academics are conducting research into the professional aspects of knowledge rather than the pedagogical aspects underpinning the development of future practitioners.

This chapter is structured around some of the many metaphors of learning that are used within the literature and employs these metaphors to organise and critique the literature around student learning. As the method in this study involved students selecting artefacts that were symbolic of learning, use of symbolism in language in the form of

metaphors to structure this chapter seemed appropriate. This chapter does not attempt to systematically review all the literature related to learning in pharmacy and how pharmacy students learn but instead examples are critiqued by highlighting the metaphors used, or implied, by the authors in their research. In many cases authors have chosen, or their work implies, one binary from many of the dualisms that are portrayed in the literature. Before this it is important to clarify the metaphors of learning used in this chapter and consider why and how metaphors are used in education.

2.1 Metaphors

The Oxford English Dictionary defines a metaphor as:

- a figure of speech in which a work or phrase is applied to an object or action to which it is not literally applicable,
- a thing regarded as representative or symbolic of something else (OED 2013).

Metaphor exists in all aspects life, not just within language but in thought and in action (Lakoff and Johnson 1980).

> *People use metaphor to think with, to explain themselves to others, to organise their talk, and their choice of metaphor often reveals – not only their conceptualisations – but also, and perhaps more importantly for human communication, their attitudes and values* (Cameron 2008 p.197).

When used in discourse, metaphors not only indicate the way we think, and therefore act, as well as our attitudes and values but also have a persuasive nature in encouraging others to adopt that way of thinking (Edwards et al. 2004 cited in Paechter 2004).

In education, metaphor has been used in teaching and learning since *'time immemorial'* (Low 2008 p.212) as it makes things *'exciting and understandable'* (Low 2008 p.212) and *'arouses the curiosity of thinkers'* (Ortony 1975 p.45). Educators likewise use metaphors to conceptualise, explain and persuade in educational theory and research, sometimes consciously and other times unconsciously:

> *Theories of learning are dependent on metaphors, either because they are centrally concerned with mental acts and conscious processes or with the operations of mental mechanisms below the level of consciousness, all of which are only describable by metaphorical means* (Elliott 1984 cited in Edwards 2006 p.8).

In her analysis of spatial metaphors used in educational theory and practice, Paechter (2004 p.450) argues that:

> *examination of the ways metaphors are used in educational discourses is illuminating of the assumptions that underpin those discourses and the ideological commitments (conscious or unconscious) of those who use them.*

She analyses these spatial metaphors in order to illuminate different perspectives on education and *'bring to the surface … what conceptions underpin our thinking about educational processes'* (p.461). Sfard (1998 p.4) argues that:

> *to bring out the tacit assumptions and beliefs that guide us … means digging out the metaphors that underlie both our spontaneous everyday conceptions and scientific theorising* [and that] *metaphors are the most primitive, most elusive, and yet amazingly informative objects of analysis.*

This chapter aims to illuminate the metaphors employed in the literature on learning in pharmacy. It does not attempt to analyse these in depth as Paechter and Sfard have done, but instead uses metaphor as units of analysis to organise the literature relating to learning that represents the context for this project. Metaphors have also been used by other authors

in making sense and building theory in educational research (Aubusson 2002), consistent with the underpinning philosophy of this project and underlining the potential benefits of this approach. Edwards (2006 p.10) asserts that there is *'little doubting the power of metaphor in both theories of learning and student's experience of learning'* again supporting the use of this type of symbolism in this project.

2.2 Metaphors of learning

The metaphors that will be used in this chapter represent many of the dualisms that exist in the literature on student learning. In 2.2.1, learning as **acquisition** considers learning as a cognitive function and as acquisition of knowledge. Within this metaphor, Meyer and Land's (2003) theory of threshold concepts will be explored as will the dualisms of deep versus surface learning (Marton and Säljö 1976) and learning subjects such as 'hard science' versus 'soft skills'. In 2.2.2, learning as **participation** will be considered along with the 'situated learning' perspective as one often presented in contrast to learning as acquisition. Most conceptual frameworks cannot be classified as purely one or the other (Sfard 1998 p.6) and Paavola and Hakkarainen (2005 p.537) argue that this division can be 'rough' and in some cases the literature reviewed in this chapter reflects this rough boundary. In 2.2.3, learning as **knowledge creation** (Paavola and Hakkarainen 2005, Paavola, Lipponen and Hakkarainen 2004) will be explored and in 2.2.4, the metaphor of learning as **performance** will consider the issues around assessment and learning. Finally in 2.2.5, learning as **dwelling** (Plumb 2008) considers a conceptualisation of learning that will be developed further in Chapter 4.

2.2.1 Learning as acquisition

The metaphor of learning as acquisition reflects an understanding of learning as concept development within the individual learner's mental structures:

> *the human mind as a container to be filled with certain materials and about the learner as becoming an owner of these materials* (Sfard 1998 p.5).

Paavola and Hakkarainen (2005) explain that this is underpinned by the idea that knowledge belongs to an individual mind and give an example of this as the:

> *traditional cognitive approach that has highlighted the role of mental models or schemata in learning, often without recognising the importance of environment or context* (Gardner 1985, Neisser 1976 cited in Paavola and Hakkarainen 2005 p.537).

Learning as acquisition of knowledge embodies a dualism between mind and body and has been the dominant perspective on learning since the earliest records of education, for example the writings of the ancient Greek philosophers Plato and Aristotle. Interestingly however, Socrates is sometimes credited with viewing education as *'the kindling of a flame, not the filling of a vessel'* (Thinkexist Quotations 2013).

Learning as acquisition underlies many dominant models and theories of learning. It is the underpinning concept in many constructivist conceptions of learning, which although they involve the learner as 'active' in constructing understanding, rely on propositional knowledge or declarative knowledge (Biggs 1999) i.e. knowledge of facts that currently 'exist' (Paavola and Hakkarainen 2005). Sfard (1998 p.6) asserts that although dissimilarities exist in schools of thought about how concepts

are acquired or developed, there is no controversy about the essence of learning as *'gaining possession over some commodity'*.

2.2.1.1 Threshold concepts

A growing influential theory in higher education that is underpinned by learning as acquisition is threshold concepts which was introduced by Meyer and Land (2003 p.1) as *'a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress'.* The idea of threshold concepts emerged during Meyer and Land's work on researching the characteristics of strong teaching and learning environments in economics as part of a large Economic and Social Research Council (ESRC) funded Teaching and Learning Research Programme (TLRP) project. Meyer and Land (2003) identified that certain concepts were held by economists to be central to the mastery of their subject and argued that these could be described as 'threshold' ones because they have certain features in common. They assert that threshold concepts are transformative i.e. involve an ontological shift as well as a conceptual one, that a threshold concept is often irreversible, that they are integrative *'exposing the previously hidden interrelatedness of something'* (Meyer and Land 2003 p.5). They also argue that in many cases this transition to understanding proves problematic to the learner representing what Perkins (Perkins 1999) describes as 'troublesome knowledge'; knowledge that is 'alien' or counter-intuitive. Students also tend to vary in their ability to cope with these learning thresholds (Meyer and Land 2003 p.7). Threshold concepts are underpinned by the ethos of propositional knowledge predefined by a discipline or profession which

are bounded in that *'any conceptual space will have terminal frontiers, bordering with thresholds into new conceptual areas'* (Meyer and Land 2005 p.6). They suggest that learning involves the occupation of a liminal space during the process of mastery of a threshold concept. This space is considered to be a transitional place where the learner may *'oscillate between old and emergent understandings'* (Cousin 2006 p.4) and this liminality or uncertainty involves both the affective and cognitive dimension. Students can construct their safe passage through this liminal state through the practice of mimicry which, although this can be an attempt to come to terms with conceptual difficulty, may also become an endpoint for some learners.

Cousin (2006 p.1) argues caution in that a threshold concept can be a *'form of disciplinary property'* and *'may carry an inherent tendency to invite congealed understandings'* and also advises resisting an *'essentialist reading of threshold concepts … by sustaining a sense of their provisional explanatory capacity'*. Cousin's caution implies concern in uncritically applying threshold concepts in disciplines and curricula, such as pharmacy, where professional knowledge is rapidly changing.

At the commencement of this study, threshold concepts appeared to offer a way of understanding the difficulties that students experience in pharmacy education. Meyer and Land (2003 p.12) do acknowledge that threshold concepts appear to be more readily identifiable in disciplines where there is a relative degree of consensus on what constitutes a body of knowledge. Land, Meyer and Smith (2008) have edited a series of

studies applying threshold concepts to different disciplines including computing, engineering, economics and biology however pharmacy and other health related disciplines are not represented in this work and there is no published research on using this concept in pharmacy to date. This creates a gap in the literature which may be useful to explore within this study.

2.2.1.2 Deep versus surface learning

Other commonly used metaphors for learning that link to learning as acquisition are deep and surface approaches to learning. In the 1970s, Marton and Säljö (1976) developed this influential theory of deep and surface approaches to learning, in which they concluded that the learner may either learn for understanding (a deep approach) or learning to memorise facts (a surface approach). Much of the debate that followed in the literature was underpinned by the question of whether the student's approach to learning is fixed or variable and whether this dualism in learning approaches actually exists (Beattie, Collins and McInnes 1997) Beattie, Collins and McInnes (1997 p.1) also argue that it may be overly simplistic to assume that a deep approach to learning is *'universally desirable'* and that it may be appropriate, *'given the nature of the knowledge to be acquired, to adopt a surface approach'.*

Haggis (2003 p.90), also presents a critique of the concept of deep and surface learning exploring *'some of the relatively unexamined assumptions and complexities that underlie the conceptual framework'*.

She argues that there are numerous paradoxes in applying the model and a questionable *'elite set of assumptions about student purposes and motivation'* (p.97) and that it *'removes the individual learner from the richness and complexity of his/her multiple contexts'* (p.98). All of which, in Haggis's view, undermine the usefulness of this approach. She argues for a complementary alternative 'academic literacies' approach. This will be revisited in Chapter 2.2.1.3 below.

The metaphors of deep and surface approach to learning underpin Aggarwal and Bates' (2000) research into pharmacy students' approach to study and to HE and attempted to relate this to their learning in professional life by using Entwistle and Ramsden's (1983 cited in Aggarwal and Bates 2000) Approaches to Studying Inventory (ASI) (identifying deep and surface learning orientation) alongside semi-structured interviews to investigate the interaction of undergraduate education with their life-long learning attributes. All students in the School of Pharmacy under study complete the ASI in final year and 17 participants from three cohorts were selected; one cohort representing a 'pre-reform, orthodox' curriculum who had been in practice for three years, one to represent the final cohort from the 'pre-reform' curriculum (currently in their pre-registration year) and finally the final year at the time of the research (the first cohort of a revised curriculum). Students were interviewed using a semi-structured format to investigate life-long learning attributes and these were compared to their ASI score. The authors found it difficult to correlate deep and surface factors in the three cohorts and found that both approaches may occur together in the

same student arguing that students appear to *'be able to use multiple approaches at will, depending on the demands placed on them'* (Aggarwal and Bates 2000 p.48). They also suggest that the multi-faceted nature of learning is not adequately described in the ASI, as indicated by the ASI authors' later work (Entwistle and Tait 1990). Aggarwal and Bates' (2000) findings imply that the deep and surface metaphors of learning may not be helpful and may be overly simplistic in exploring how pharmacy students learn.

The qualitative data in Aggarwal and Bates' (2000) study yields some interesting findings. Although collected in a cross-sectional manner meaning detailed comparison between cohorts may not be valid, the authors conclude that:

> *approach to studying is a reaction to the environment, the teaching, subject relevance and interest attributed to the learning task by students and modulated by the students' perceptions of all these influences* (Aggarwal and Bates 2000 p.51).

They also argue that fostering a deep approach may not be necessary in ensuring that learning is appropriate. This concurs with Beattie, Collins and McInnes's (1997) critique of deep and surface approaches and with other researchers' work (Tait, Entwistle and McCune 1998) which extends Marton and Säljö's (1976) theory indicating that students are often 'strategic learners'; adapting their approach to learning to suit the subject, environment, time constraints and assessment type (Entwistle and Tait 1990, Entwistle and Peterson 2004, Hounsell and Hounsell 2007). Entwistle, McCune and Hounsell (2002 p.7) develop this idea further and define this as *'organised study and directed effort'*. In more recent work, Entwistle and Entwistle (2003 p.19), in their exploration of

memorising and understanding, urge caution warning *'against too ready a linkage of intention to any specific process in student learning: a deep intention can involve rote memorisation, while a surface approach at university level will include understanding, even if it is reproduced from lecture notes'* again implying that these classifications may be overly simplistic.

Aggarwal and Bates (2000) identified external and internal motivators for learning in their participants exemplifying another dualism in the literature on pharmacy education. They classified extrinsic factors impacting on learning as encompassing goals, promotion, examination, pressures, image and competition and internal factors affecting the intrinsic desire to learn as internal standards, interest, self-esteem and personal autonomy.

Garavalia, Scheuer and Carroll (2002) studied pharmacy students' motivation in a School of Pharmacy in the USA using a psychological instrument, the Motivated Learning Strategies Questionnaire (MLSC) (Pintrich et al. 1991 cited in Garavalia, Scheuer and Carroll 2002). They also divided motivation into extrinsic and intrinsic and found that third year students reported greater intrinsic motivation than first year, indicating that intrinsic motivation may increase as students progress through their studies. The opposite was found with extrinsic motivation, found to be higher in first years, however they report that this comparison was not statistically significant. The authors explain that their findings differed from prior research however the small numbers (50

students from each stage) question the generalisability of their findings and they go on to argue that further longitudinal studies are needed to explore this further.

Langley, Jesson and Wilson (2010) also used extrinsic and intrinsic factors as a classification in their exploration of influences to choose pharmacy as a career in students from across thirteen Schools of Pharmacy in the UK. Although the focus of the study is perhaps not directly relevant to this study, motivation for the future was explored and the authors observed motivational differences between male and female students with males more *'interested in opportunities for independence, through ownership [of a pharmacy] or self-employment'* (p.83) and females more *'socially oriented and to be thinking ahead to the work life balance they want to make'* (p.83).

At first glance, Taylor and Harding's (2007) exploration of pharmacy students from four Schools of Pharmacy's perceptions of the undergraduate curriculum's function as a foundation for professional practice, appears to be underpinned by 'learning as participation' with a focus on professional socialisation and development of professional identity. On further analysis, however they use terms like 'acquisition' of professional identity and explain student learning strategies for professional identity with reference to surface and superficial learning and deep, active learning. Although the study uses qualitative methods, the authors do not foreground the perspectives which influence the design and conduct of the study. The authors found that students' focus was on

acquiring a firm foundation of scientific facts and developing scientific and technically precise skills, seeing this as a *'rite of passage'* (p.86) before progressing to exposure to professional socialisation. Participants also expressed disappointment about the lack of opportunity for practice placements and the authors conclude that:

> *professional acculturation becomes secondary to learning the science and the long process of establishing their identity as nascent professionals is deferred* (Taylor and Harding 2007 p.87).

Although the research for this thesis did not plan to use a psychological instrument such as the ASI, Aggarwal and Bates' (2000) qualitative findings on motivators for learning were helpful in developing the conceptual map used in developing a conceptual framework for this study (see Chapter 3.1.2 and Appendix I) and were compared with the data presented in Chapter 4.

2.2.1.3 Hard versus soft learning

Much of the literature relating to learning in science is underpinned by the understanding of knowledge as concepts building on Piaget's genetic epistemology and related cognitive science views (Piaget 1937 cited in Leach and Scott 2003). Pharmacy education has a strong scientific underpinning (see Chapter 1.2) but also involves considerable development of professional and social skills alongside an understanding of the many facets of the patient. Another metaphor representing this potential dualism is hard (science) versus soft (skills). Hard science is defined as *'science in which facts and theories can be firmly and exactly measured, tested or proved'* (Cambridge Advanced Learner's Dictionary

2013) and this metaphor links very strongly to learning as acquisition. The development of soft skills, which are defined as *'personal attributes that enable someone to interact effectively and harmoniously with other people'* (OED 2013) can be considered as linked to acquisition (acquisition of skills) but may also usefully be linked to the following metaphor of learning as participation. The metaphor of hard and soft disciplines comes from work by Kuhn (1962 cited in Matthew and Pritchard 2009) and Biglan (1973 cited in Matthew and Pritchard 2009). Matthew and Pritchard (2009 p.59) explain how Biglan categorised 'hard' disciplines as ones *'characterised by the existence of paradigms that specify appropriate problems for study and the appropriate methods to be used'* and 'soft' disciplines as those that are non-paradigmatic.

Law (2004) gives an interesting account of Latour and Woolgar's (1979 cited in Law 2004) analysis of scientific knowledge practices. Scientific certainty and truth may be more value bound (or perhaps 'softer') than some scientists believe it to be. Law's arguments about practices will be picked up again in Chapter 2.2.3.

Matthew and Pritchard (2009) discuss the metaphor of hard and soft and ask if it is a useful way to think about disciplines. They argue that use of the hard metaphor of a discipline implies that it is *'almost set in stone how you should teach and learn it'*, limits the thinking about what is taught and is likely to produce professionals (in their case engineers) *'who are limited in their vision and thinking'* (p.59). They further argue that the hard and soft metaphors are perhaps more '*reflective of the*

individual's perceptions of their own disciplinary preferences and strengths' (or perhaps their ontological or epistemological perspective) rather than *'an accurate descriptor of the nature of knowing and understanding within a discipline'* (Matthew and Pritchard 2009 p.59).

Returning to pharmacy and considering both the 'hard' and the 'soft' metaphors in relation to this, it could be argued that pharmacy is a blend of hard and soft (see discussion of the sciences of pharmacy in Chapter 1.2).

Barnett, Becher and Cork (1987) reviewed three areas of professional education at degree level; nursing, pharmacy and teaching with all three being *'so called caring professions'* (p.52). Pharmacy was chosen by the authors to exemplify the *'hard, scientific end of the spectrum'* (p.52) of knowledge. The review was written in the mid 1980s prior to the significant shift in emphasis in pharmacy education referred to in Chapter 1.2.3 following integration of the concept of pharmaceutical care (Hepler and Strand 1990). Many of Barnett, Becher and Cork's conclusions no longer apply to pharmacy education as it now exists nearly 30 years later, for example the lack of engagement of pharmacy academics with the profession and the *'lack of serious attention to the vocational and skills element'* of pharmacy (p.61), however a number of their observations still ring true. They assert that there is a triangular relationship between academics, practitioners and students which bears on the students' total learning experience and offer a model professional education which they call a partnership model; with the academic as the

main contributor to development of intellectual skills and the practitioner as the main contributor to initial development of practical skills. As pharmacy education moves into a new phase of development (described in Chapter 1.2.3) with an overall desire to increase the clinical contact in the undergraduate curriculum, this model may be useful to reflect on. The authors conclude that:

> *courses of professional education need to be designed in such a way as to emphasise the students' autonomy in learning and their ability to reflect on their own practical experience* (Barnett, Becher and Cork 1987 p.62).

The research for this thesis may be able to explore the current generation of pharmacy students' experience of autonomy in learning and their reflective abilities.

Considering the 'hard' science metaphor, specifically the positivist epistemological underpinnings of this, Kaartinen-Koutaniemi and Lindblom-Ylänne (2008) compared personal epistemological beliefs of undergraduate psychology, theology and pharmacy students in Finland using semi-structured interviews to explore individual perspectives of thinking, knowing and reasoning. At first glance their aims and methods seemed very relevant to this study and their findings seemed to indicate that students' beliefs were strongly influenced by the characteristics of their curricula and with the nature of their discipline, as well as by academic practices instilled by their teachers. The authors do not give consideration of students' beliefs on admission i.e. the extent to which students chose their profession because of their existing epistemological beliefs. Langley, Jesson and Wilson (2010) found that liking science and ability in science were among the most important influences on the

decision to study pharmacy implying strong positivist epistemological beliefs in those applying for pharmacy courses, linking back to Matthew and Pritchard's (2009) assertion of disciplinary preferences and strengths.

Returning to Kaartinen-Koutaniemi and Lindblom-Ylänne's (2008) findings, direct comparison of their pharmacy students' beliefs to UK based students may not be possible due to the differences in curricula between Finland and the UK; European pharmacy courses tend to be more 'hard science' focussed than most of those in the UK although Langley, Jesson and Wilson's (2010) findings may confirm a similarity. Never-the-less, Kaartinen-Koutaniemi and Lindblom-Ylänne's general findings may have general applicability to this study; the learning environment seems to have a strong influence on how pharmacy students learn and this may be important to explore.

Returning to the 'soft' skills metaphor, a number of researchers have written about skills development in pharmacy. Holder *et al.* (1999) looked at a specific learning issue in relation to pharmacy students, namely academic literacy and literacy and communication skills. This is an example of a rough boundary between the metaphors as Haggis (2003) argues that academic literacy is a way of overcoming the limitations of dualistic divisions.

Holder *et al.*'s (1999) study was conducted in Australia and arose from a concern for the level of literacy and communication skills of students and

the possible effects poor literacy may have on their progress. The authors conducted a longitudinal retrospective investigation by measuring four cohorts of students' academic literacy skills using a diagnostic instrument (Bonanno and Jones 1997 cited in Holder et al. 1999) shortly after entry to university and statistically correlated alongside their 'Tertiary Entrance Rank' (a state-wide selection index) with time taken to reach graduation and performance in assessments. The findings of the study indicated that performance in a number of subjects (except mathematics and biostatistics) correlated with literacy (comprising use of source material, structure and development of text, control of academic writing style and grammatical correctness) rather than subject knowledge alone. The authors postulate that by focussing on maths and science subjects in high school, students may have restricted opportunities for developing literacy skills and also report that it is difficult to convince students who have good academic entrance grades but low literacy 'scores' that they need help. They also argue that the pharmacy curriculum may develop some literacy skills better than others.

Building on Holder *et al.*'s (1999) work, Scouller *et al.* (2008) studied first year pharmacy students' experiences and expectations of HE and linked this to their academic literacy. Although the focus of their work was retention and predicting 'at risk of failure' students, they explore what they describe as a 'complex picture' of first year students.

In terms of relevance to this study, Holder *et al*. (1999) and Scouller *et al*.'s (2008) findings would indicate that academic grades alone are not

sufficient for progression through a pharmacy undergraduate degree and learning skills such as literacy are important predictors of student success and achievement. Their concerns about focus on maths and science at school however, may be less relevant to pharmacy students at RGU, the majority of whom come from either a Scottish or southern Irish educational background which has a broader educational focus and all students entering the MPharm are required to have English at Scottish Higher or Irish Leaving Certificate Honours level.

Again within the 'soft' skills metaphor, Langley and Aheer (2010 p.114) ask whether pharmacy graduates possess the necessary professional skills making similar arguments to those as made in Chapter 1.2 about pharmacy's move from a *'technical to a clinical profession'* and the lack of funding for placement teaching within the undergraduate curriculum. They interviewed five key individuals involved in the recruitment of UK pre-registration trainees and surveyed 130 final year pharmacy students from one School of Pharmacy about what it means to be a professional and the attributes and skills required. Skills considered to be important by recruiters were *'dealing with people'* (p.116), demonstrating empathy and communication skills and they also commented on graduates' inability to be able to apply knowledge in practice attributing this to the lack of placement experience. Final year students had similar views to recruiters on the professional attributes required but the authors identified a discrepancy between their perceptions of their own abilities and those of the recruiters. Final year students sampled thought they *'either had most or some of the necessary skills that are required of*

pharmacists' (p.118) which contrasts with recruiters who perceived them to be deficient in some areas.

Similar to the position in pharmacy, Matthew and Pritchard (2009) reflect on the continual response to changes in professional standards (in engineering) to ensure that the professionals of tomorrow are *'fit for purpose'* (p.65). They urge caution about considering the discipline as 'hard' implying no room in the engineers' *'social consciousness for the moral engineer'* and that we should be asking the question *'how do our teaching and learning spaces in HE enable students to transcend the current traditions of disciplines and think outside the disciplinary boxes?'* (p.65). This is also a challenge which is worth considering in pharmacy education.

Much of the research published in pharmacy education and on student learning and all of that reviewed in this section is underpinned with a conception of learning as acquisition, either of knowledge or of skills. For a profession that is rapidly changing, such as pharmacy, an acquisition approach may not equip graduates for the complexities of future practice. This large body of literature underpinned with learning as acquisition, contrasts with a small body of literature considering learning in pharmacy as participation.

2.2.2 Learning as participation

An alternative conception to learning as acquisition is the metaphor of learning as participation. This has been described as an:

> *interactive process of participating in various cultural practices and shared learning activities that structure and shape cognitive activity in many ways rather than something that happens inside individuals' minds'* (Paavola and Hakkareinen 2005 p.4).

Learning as participation fits within a socio-cultural view of learning which has its origins in Vygotskian and neo-Vygotskian psychology:

> *Learning and meaning-making are portrayed as originating in social interactions between individuals, or as individuals interact with cultural products that are made available to them in books or other sources'* (Leach and Scott 2003 p.93).

Learning is considered to be a process of becoming part of a community; *'a legitimate peripheral participation'* within a *'community of practice'* (Lave and Wenger 1991, Wenger 1999). Learning as participation is not underpinned by concepts or knowledge but rather 'knowing' indicating action (Sfard 1998 p.6) or 'doing'. It is also not bounded or separate from context, is often referred to as situated learning (Lave and Wenger 1991), unlike learning as acquisition is without a clear end point and is considered an ongoing process or 'practice' involving social mediation (Sfard 1998). Becoming part of a community involves learning the language and how to act according to its socially mediated norm (Sfard 1998 p.6). Learning is seen as *'indexically bound to its social and material environment'* (Paavola and Hakkareinen 2005 p.538) and is a *'social process of knowledge construction'* (p.538).

Edwards (2006 p.7) cites Sfard's (1998) argument that the learning as participation metaphor is *'gradually displacing acquisition metaphors of learning'* and although the research literature in pharmacy education is slow to follow in this displacement, some research acknowledges and is underpinned by learning as participation. Black and Plowright (2008) in

exploring developing professional understanding and deep, reflective learning, present findings as part of a larger study on researching *'learning and dialogue-with-self in facilitating reflection on learning and professional practice'* (p.30). Their paper explores postgraduate pharmacy students' perceptions of learning and understanding of learning strategies used along with how they employed reflective learning in developing their professional understanding and practice. In particular they focus on one theme from the study; traditional and non-traditional learning which they argue *'provides insight into how pharmacists perceive learning and the approaches they adopt'* (p.30). Their conceptualisation of traditional learning links to learning as acquisition and non-traditional is more closely aligned with learning as participation.

Whilst Black and Plowright's (2008) findings relate to post-graduate students, who may conceptualise their learning differently to undergraduate students due to their practice experience and established professional identity, their conclusions that behaviourist and constructivist orientations to education (yet another dualism) result in different types of learning may still be interesting to explore in the context of this project.

They assert that traditionally the 'behaviourist approach' has dominated in pharmacy education; the 'how to' orientation associated with vocational education is the underpinning of pharmacy's *'community of professional practice'* (p.29). Similar to the changes discussed in Chapter 1.2, Black and Plowright's institution is experiencing a paradigm shift

towards a constructivist epistemological orientation as a result of professional changes in pharmacy. They took an explicitly stated interpretivist approach (one of the few research papers reviewed in which the authors foregrounded their theoretical position) and conducted focus groups and interviews with 26 pharmacists registered on their Supplementary Prescribing course (a postgraduate qualification leading to registration as a prescriber). Participants referred to traditional and non-traditional learning and described being comfortable with traditional learning; the 'factual', academic, right or wrong learning they had experienced as undergraduate students. Black and Plowright (2008 p.30) felt that some traditional pharmacy roles, for example dispensing, had helped to *'embed the traditional, scientific, behaviourist approach to learning'*. They link this to Schon's (1987, 2002 cited in Black and Plowright 2008) technical-rationality model and participants described their traditional learning as simple or surface learning. Some anxieties were expressed by participants about the non-traditional, reflective way of learning that it may happen at the expense of the traditional way of accumulating the *'scientific knowledge … to ensure up-to-date clinical practice'* (p.31) however the two approaches were recognised as synergistic. Black and Plowright's work has interesting implications for this study and although conducted from an explicitly constructivist perspective, like much of the other pharmacy education research, is underpinned by a number dualisms and 'either or' positions which this study aims to avoid.

Sørensen *et al.* (2005) consider situated learning specifically in the context of pharmacy internship in Sweden. They conducted an intervention study comparing students who participated in a practice based research project during their internship with those who did not. They assert that involvement in the project provided a:

> *platform for the students to work independently and to integrate the students into the working community of the pharmacy to allow 'legitimate peripheral participation' (Lave and Wenger 1991)* (Sørensen et al. 2005 p.228).

Students in the intervention group scored significantly higher on knowledge and on expectations of the internship, the same as the control group on satisfaction with working independently and being integrated into the pharmacy team and lower than the control group on ability to integrate theoretical knowledge into practice (which the authors postulate may have been due to lack of time). The authors conclude that those students who took part in the participatory action research project learned more than those who did not and explained this in part by the theory of situated learning although interestingly students did not rate themselves as more satisfied with working independently and being integrated into the pharmacy team, two of the main elements of legitimate peripheral participation.

In another study underpinned by learning as participation, also conducted in Sweden, Wallman *et al.* (2011) explore how pharmacy students learn in an internship. The authors conceptualise learning using Eraut's (2000 cited in Wallman et al. 2011) formal and informal categorisation, again another dualism although presented as a range on a scale. They describe a continuum of formal to informal learning with formal learning as taking

place in planned, intentional, organised activities for example lectures and seminars at university and informal learning as unorganised, unplanned and incidental i.e. that which takes place as a 'by product' of activities that take place. They considered learning that takes place within work at the pharmacy somewhere in the middle of the continuum. They explicitly conceptualise the informal learning as situated learning within the communities of practice perspective. Students and tutors had problems integrating formal learning activities into practice in the pharmacy. Both groups identified informal but intentional and semi-structured activities as most important for learning such as observing, listening, being supervised and reflecting. Where learning happened as a by product of an activity, it was mostly identified by tutors; students tended not to be aware of the tutor's intention to create a learning experience and were less able to recognise learning as a by product of working. Students tended to assimilate and imitate how others worked, similar to the mimicry referred to in threshold concepts (Chapter 2.2.1.1) which the authors identify as learning as a product of participation, arguing that the social context was of great importance to learning and that the tutor was perceived as crucial to support learning activities. In their conclusion, the authors highlight the importance of raising the awareness of incidental learning.

Sørensen *et al.* (2005) and Wallman *et al.*'s (2011) work gives an interesting perspective on learning in pharmacy which provides a view on situated learning that is currently unique in the literature and provides useful insight into student learning in a practice setting. This may

however, currently have limited application to undergraduate pharmacy education in the UK as both are relevant to student learning during an internship and the equivalent of this in the UK (the pre-registration year), happens outwith undergraduate studies. As placement experience grows in the undergraduate curriculum (see Chapter 1.2) and if the potential 5-year integrated curriculum goes ahead, these findings may prove to be useful.

2.2.2.1 Ways of thinking and practising

A concept that is linked but different to threshold concepts, *ways of thinking and practising (WTP)* (Hounsell et al. 2005) emerged from the same TLRP study as threshold concepts did. In their first paper Meyer and Land (2003) align threshold concepts closely with WTP however later publications on threshold concepts contain less reference to this and both theoretical constructs appear to have taken a divergent (although perhaps parallel) direction of development. Meyer and Land (2003) acknowledge that WTP may be considered to be more useful than threshold concepts in areas, such as pharmacy, where there is not such a clearly identified body of knowledge or to use the knowledge creation metaphor, where knowledge is emergent. A number of researchers (McCune and Hounsell 2005, Hounsell and Anderson 2009) have explored WTP in the context of disciplines such as biosciences, a discipline with well established body of knowledge, as well as history in which a single foundational framework is less clear. Hounsell and Anderson (2009 p.72)

argue that the concept of WTP *'shares the many-sided but inter-woven character of learning for the professions'* in that they are:

> *not confined to knowledge and understanding, but could also take in subject-specific skills and know-how, an evolving familiarity with the values and conventions governing scholarly communication within the relevant disciplinary and professional community, and even a nascent meta-understanding of how new knowledge within the field was generated* (Hounsell and Anderson 2009 p.72).

McCune and Hounsell (2005 p.255) explored WTP specific to biology as a discipline, which they identified as:

> *the students' interactions with the primary literature in the discipline and with experimental data, and their efforts to master the requirements and conventions of and for written and oral discourse.*

Hounsell and Anderson (2009 p.74) further refer to these *'ground-rules for communicating within the subject and the challenges which these posed'.* They then go on to compare these WTP in biology to the those identified in history, which as discussed before *'does not possess a single agreed, foundational theoretical framework'* (p.76) and also has *'competing narratives and explanations'* (p.77). This could be argued as similar to the position of pharmacy as a discipline (as discussed in Chapter 1.2). The WTP that Hounsell and Anderson identified as key to students' *'high quality engagement with historical topics'* were a *'conception of the nature of historical knowledge'* (as socially constructed and contested) as well as a *'capacity to interact with that knowledge'* (p.77).

Hounsell and Anderson go on to draw on Anderson and Day's (2005 cited in Hounsell and Anderson 2009) writings on disciplinary practices and reflect that it is *'important not to reify these practices or to treat them as*

'free-standing' elements, independent of the agents who deploy them in specific situations' (p.78). They assert that WTP are not *'static objects to be passed on to students'* but rather the focus is on:

> *performance of ways of thinking and practising – a performance that involves dynamic processes of interpretation and construction by lecturers and students within the affordances and constraints of a particular academic environment* (Hounsell and Anderson 2009 p.78).

The metaphors that are mobilised in the literature around WTP are multiple and this is another example of Paavola and Hakkareinen's (2005) 'rough' boundary. WTP could be considered as learning as participation; as learning to participate in the established practices of a discipline. It could also link to the following metaphor of knowledge creation and to disciplinary practices and Hounsell and Anderson also use the metaphor of performance in describing WTP. Ways of thinking and practising will be explored further in the context of the data from this study in Chapter 6.

Returning to learning as participation, Paavola and Hakkareinen (2005 p.539) summarise the focus of learning as participation as *'increased mastery of a community's knowledge without a deliberate effort for transformation'* and argue that a limitation of this is that '*the model focuses on adaptation to existing cultural practices'* and therefore *'does not prompt one to pay any special attention to creative changes in these practices'.* As a result of the limitations of this and of learning as acquisition they have created a third metaphor of learning: learning as knowledge creation.

2.2.3 Learning as knowledge creation

Paavola and Hakkareinen (2005) assert that learning as acquisition and participation are valuable but *'neither of them appears to be sufficient when addressing processes of deliberately creating and advancing knowledge'* (p.538) and that another metaphor of learning is needed that goes beyond these two *'in order to be able to answer the challenges of the knowledge society'* (p.536). Their metaphor of 'learning as knowledge creation' concentrates on mediated processes where common objects of activity are developed systematically and collaboratively. The knowledge creation approach examines learning in terms of *'creating social structures and collaborative processes that support knowledge advancement and innovation'* (p.539) closely aligning with learning as participation. At the same time it has commonalities with learning as acquisition because of the emphasis on generating new ideas and conceptual knowledge. However the nature of conceptual knowledge in the knowledge creation metaphor differs to that of acquisition with some perspectives emphasising more the *'conceptual aspects of creating knowledge'* and others addressing *'innovations embedded in new practices and social structures'* (p.540). In this approach, the 'object of enquiry' may itself become an aspect of change or the focus of activity.

In relation to 'learning as knowledge creation' in pharmacy, Guirguis (2011) in a paper with a catchy sub-title of *'It was kind of interesting to get to step out of my science-orientated mind and to get to be creative!'* explores the use of improvisation games in a pharmacy communications course. Guirguis introduced improvisation into a first year pharmacy

communication course to *'enhance students' ability to listen and develop a conversation without anticipating its progression and to influence students' epistemological beliefs'* (p.201), arguing that improvisation has the potential to address, not only what students learn but also how they learn. Findings of the evaluation included difficulties students experienced, perceived relevance and positive and negative outcomes. Students found it *'challenging to get started in this new task'* (p.202) and many found the activities uncomfortable but some found that discomfort was a stimulus for learning. Students were ambivalent about improvisation but many described a shift in the source of knowledge and *'realised that they themselves could be the source of knowledge'* (p.203) with Guirguis asserting that improvisation allowed some students to *'explore new ways to construct knowledge'* (p.203) and *'may be a stimulus to initiate students' understanding of the complexity of professional knowledge and learning'* (p.203). This research appears to be unique in exploring knowledge creation in pharmacy education.

Linked closely with the knowledge creation metaphor, Law (2004, 2009) writes extensively about knowledge practices, challenging established assumptions and perspectives about reality. Practices are conceived by Law (2009 p.1) as *'detectable and somewhat ordered sets of material-semiotic relations'* and study of these involves exploring patterns and how they are assembled in particular locations. He argues that we should:

> *attend to practices. Look to see what is being done. In particular … how it is being done: how the relations are being assembled and ordered to produce objects, subjects and appropriate locations … Wash away the assumption that there is a reality out there beyond*

> *practice that is independent, definite, singular, coherent, and prior to that practice. Ask … how it is that such a world is done in practice, and how it manages to hold steady … Ask how this process works to delete the way in which this sense of a definite exterior world is being done, to wash away the practices and turn representations into windows on the world* (Law 2009 p.12).

Law (2004) goes on to discuss how this idea of practices is underpinned by multiple realities. He argues that in Western metaphysics it is assumed that there is a single reality out there but, within the concept of material semiotics (discussed further below), these realities and their descriptions are relational effects and therefore there are lots of them because there are lots of practices. Law draws on the work of Mol (2003) who carried out an ethnographical study of atherosclerosis in a Dutch university hospital. She found that the disease was 'enacted' in multiple sites across the hospital (the clinic, the pathology lab, the radiology department, the operating theatre) and in each of these the people interacting with this artefact in those different sites had a different *'method assemblage'* (Law 2004 p.50) and their own set of practices. This, argue Mol and Law results in multiple realities.

> *Different realities are being created and mutually adjusted so that they can be related – with greater or lesser difficulty* (Law 2004 p.55).

Law's conception of practices has been used to underpin much of the data analysis within this thesis and Mol's multiple realities provides another useful theoretical position to explore in relation to pharmacy students learning.

Law's concept of practices also links with the methodology chosen for this study. This will be explored in more depth later, but at this stage I should say something about the choice of methodology in relation to objects or

artefacts. Visual data have become a prominent approach in qualitative research following their established use in visual anthropology (Banks 2007). Awareness of the material in human experience, often described a *'socio-material approach'* (Fenwick 2010), is a focus of inquiry in the current literature on learning which Fenwick (2010 p.104) argues:

> *challenges the centering of human processes in learning (often conceived as consciousness, intention, meaning, intersubjectivity and social relations) … and foregrounds the material.*

These *'material-semiotic relations'* (Law 2009 p.1) which Law conceives as practices, are not being considered to *'reify or bring into focus "things"'* (Fenwick 2010 p.107) but instead to problematise the separateness of things, or the 'out-thereness' described by Law (2004 p.24). In socio-material approaches, all *'entities are understood to be mutually constituted'* (Fenwick 2010 p.107) and the material world is *'treated as continuous with and in fact embedded in the immaterial and the human'* (Fenwick 2010 p.105). In anthropology, which this project will draw on, the relationship between humans and artefacts has long been recognised and researched. This idea will be explored further in 2.2.5 below, but using material objects in the research process has the potential to *'cause trouble, provoke* [and] *be awkward'* (Woolgar *et al.* 2009 cited in Fenwick 2010 p.105) in relation to pharmacy students learning in order to construct different understandings. In the same way, using the material-semiotic practice of art in attempting to understand student learning differently, has the potential to allow sense-making in relation to practices.

Law's concept of practices also connects with the next metaphor of learning as performance. Mol describes the *'performativity of enactment'* (Law 2004 p.56) in considering multiple realities in that the enactment produces reality:

> *if an object is real this is because it is part of a practice. It is a reality enacted* (Mol 2003 p.44).

2.2.4 Learning as performance

Barnett (2007 p.9) reflects on the concept of *'higher education as performance'* which he argues demands the student's attention over higher education as a form of critical reflection. The argument that assessment drives student learning is widely made in the literature on learning and involves the student 'performing' to meet the 'qualification' purpose of HE (Biesta 2009). Boud and Falchikov (2006 p.411) take issue with the view that assessment supports students' learning and argue that *'there is a dominant view of assessment that is not sufficiently compatible with the goal of fostering learning'*. HE institutions are required to assess students within quality assurance (QA) frameworks to enable award of qualifications however measurement of learning is often in conflict with the development of the individual and their learning. Naidoo and Jamieson (2005) also reflect on the QA agenda and the publication of HE performance indicators and that this is changing the nature of HE and therefore influencing student learning in HE. Taras (2002 p.501) likewise claims that students are *'disillusioned and frustrated because the aims and ideals for the pedagogic process seem to be shattered by the perennial pressures of summative grades'* implying that performance may inhibit learning rather than support it. If we adopt

the 'knowledge creation' metaphor and consider knowledge practices, there is also the difficulty of assessing something that is fluid and knowledge and practice that is emergent.

These tensions have not been explored in pharmacy education however, considering 'learning as performance' in pharmacy, Hanna, Hall and Hennessey (2012) explored pharmacy students' views on feedback and found that students viewed it as important for improving performance and clarifying mistakes. Students in this study expressed dissatisfaction with examination feedback but considered feedback in other modules to be excellent in terms of quantity and quality. The authors argue that feedback is important in correcting mistakes, which they considered critical in pharmacy to protect patient safety, and can positively influence professional performance.

The literature on assessment and learning will be explored further in Chapter 5 alongside the data on student assessment practices.

2.2.5 Learning as dwelling

Plumb (2008), draws on a concept developed by Ingold (2000, 2011) and Plumb uses the metaphor of *'learning as dwelling'* as a *'powerful way of characterising human learning processes'* (Plumb 2008 p.62).

Ingold (2000) describes how his thinking, as an anthropologist, about the ways in which humans inhabit the world has moved from considering the

interrelationships between people and their environment as a 'building perspective' to that of a 'dwelling perspective' (p.172). He explains this as:

> *a perspective that treats the immersion of the organism-person in an environment or lifeworld as an inescapable condition of existence* (Ingold 2000 p.153).

Ingold goes on to explain how considering human beings' interrelationships with their environment as 'dwelling' allowed him to move away from a Cartesian duality of humans as biological organisms, and the consequent implications for their relationship with the environment, but yet intentionally motivated, implying an entirely different relationship.

The building perspective that Ingold critiques encompasses the idea that humans inhabit the world and are capable of reacting to it deterministically i.e. they are capable of agency. In contrast to this ontology of the rational subject set against an objective world, Ingold's dwelling perspective adopts Heidegger's ontology of engagement in which the person already dwells in the world. Plumb (2008) goes on to explain Ingold's argument that:

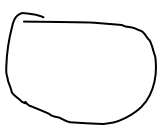
> *the building perspective has us focus on the final products of our making. It is an entifying and objectifying point of view. The dwelling perspective, conversely, has us focus on the ongoing processes of existence that catch us in their thrall at our very conception (and even before). It is a developmental, dialectic point of view. It turns our attention to the processes that shape the 'temporal interweaving of our lives with one another and with the manifold constituents of our environment' (Ingold 2000 p.348)* (Plumb 2008 p.71).

In relating Ingold's ideas to learning in his in-depth discussion of 'learning as dwelling', Plumb (2008 p.62) explains how learning for dwellers:

> *is not a process of incorporating external knowledge into their minds. Rather, learning is best conceived as a process through which learners forever weave themselves into the fabric of their natural, social and cultural worlds.*

In relation to learning, Plumb uses Ingold's building perspective to critique the *'modernist perspective on learning which is prevalent in adult learning'* (p.65) citing the acquisition theory of learning as an example of this. His argument is that the building perspective on learning is underpinned by an assumption that a *'context-free body of knowledge actually exists'* citing Lave and Wenger's argument that it privileges the *'sharp dichotomy between inside and outside'* (Lave and Wenger 1991 cited in Plumb 2008 p.47) and therefore that learning is a *'process that transpires in heads of individual people'* (Plumb 2008 p.65).

This echoes with Ingold's (2011) idea of the *'logic of inversion'* in his later work where he argues that the animic perception of the world involves considering the *'relational constitution of being'* (p.69). He describes the logic of inversion as the view that a '*thing or person is converted into an interior schema of which its manifest appearance and behaviour are outward expressions'* (p.68). Ingold (2011 p.69) uses a diagram to represent this concept. If an organism is depicted as this:



it has been 'folded in on itself' with a boundary to the outside world.

The person therefore, in this ontology:

> *acts and perceives within a nexus of intertwined relationships* [and is] *presumed to behave according to the directions of cultural models or cognitive schemata installed inside his or her head* (Ingold 2011 p.68).

Therefore this idea of inversion is that:

> *beings originally open to the world are closed in upon themselves, sealed by an outer boundary or shell that protects their inner constitution from the traffic of interactions with their surroundings'* (Ingold 2011 p.68).

He goes on to explain that by using a line to represent the organism:

there is no inside or outside, no boundary and instead there is a trail of movement or growth and therefore we can reverse this logic of inversion. Ingold goes on to argue that doing so allows us to recover an '*openness to the world'* (p.68) which other perspectives close down. The acquisition theory of learning may be likened to Ingold's concept of logic of inversion where learning occurs inside the individual in response to an external environment.

Plumb adopts Lave and Wenger's (1991) argument that *'the individualistic and overly cognitive view of human learning as a process of acquiring knowledge must be abandoned'* (Plumb 2008 p.66) however he further argues that Lave and Wenger's social theory of practice *'over-extends the social dimension of learning to occlude important non-social elements'* (p.66). He asserts that adoption of a 'learning as dwelling' perspective:

> *allows us to escape the individualism, objectivism and instrumentalism of this* [Enlightenment] *ontology without recourse*

> *to unpromising critical strategies taken by many postmodernists* (Plumb 2008 p.63).

Plumb goes on to discuss in depth some of the overly relativistic standpoints on learning and argues that these:

> *result in an untenable relativism that affords little purchase for a non-foundational, substantial practice of adult education* (Plumb 2008 p.69).

Ingold (2011 p.72) refers to the primacy of movement in his theorising and that the *'movement of life is specifically of becoming rather than being'* and elsewhere describes learning as improvising a movement along a way of life (Ingold 2010). Following on from Ingold's assertion that reversal of the logic of inversion allows us to recover openness to the world, since this study is interested in pharmacy students' journey to becoming pharmacists and as openness to pharmacy students' world is an underpinning ethos of this project, the concept of 'learning as dwelling' and students' movement along the way of life appears to offer a resource for thinking otherwise about their learning.

Linking to the methodology of using art to analyse the data, elsewhere in his 2011 work, Ingold uses the concept of drawing and painting as a heuristic to transpose onto social life. He draws on art historian, Bryson's work (2003 cited in Ingold 2011) which talks about the painter or draughtsman *'poised at that inaugural moment when the hand is about to make its first trace on an initially blank surface'* (Ingold 2011 p.220). He describes how Bryson argues for the radical difference between painting and drawing and the *'perceptions of blankness, and of the potential that it holds'* in each. In essence, the painter perceives a blank

surface to be filled, but one which is *'bounded by a frame'* which *'exerts a pressure'* on the composition. This pressure '*has to anticipate the reality of the complete picture of which it will eventually form a part'*. In contrast to this, drawing is not *'compelled to observe this law'* (p.220).

> *Although the blank surface of the paper is perceptually present, it does not have to be conceived as a surface, as an area that needs to be filled. It becomes rather a 'reserve', a kind of insurance against finality and closure* (Ingold 2011 p.220).

In drawing, the pencil *'carries on its way from where the hand is now positioned, responding only to the present conditions in its vicinity rather than to any imagined future state'* (pp.220-1). This links back to Ingold's earlier idea of openness to the world and using this heuristic, he argues *'allows us to better understand how lives are lived not in closed social worlds but in the open'* (p.221).

These ideas of Ingold's about painting and drawing will be explored further in Chapter 5 in relation to Bonnard's style of painting however they create another perspective through which to explore and understand pharmacy students' learning.

2.3 Conclusion and research questions

In attending to the metaphors of learning used or implied in the literature on pharmacy education, different perspectives on learning in pharmacy have been illuminated. In doing so, in the ethos of the literature on metaphor in education, tacit assumptions and beliefs (Sfard 1998), underpinning conceptions (Paechter 2004), and shared ideas and concepts (Gibbs 2007) have been brought to the surface. Learning as

acquisition appears to be a dominant perspective in research into pharmacy students' learning, perhaps unsurprisingly as a discipline rooted in the natural sciences. Within this however, there is no research on threshold concepts within pharmacy. There is some research underpinned by learning as participation, primarily on practice-based learning or learning in qualified professionals. Learning as knowledge creation is not a widely researched perspective in pharmacy and as a discipline dealing with emergent knowledge and practices, would appear to offer an alternative approach to understanding how students learn in pharmacy. Learning as dwelling has not been applied to pharmacy education to date and again offers an alternative lens through which to view the data. Taking a 'practices' and 'dwelling' approach and drawing on theoretical literature from other disciplines (sociology and anthropology), would appear to be an alternative way to resolve the dualisms referred to earlier and this study therefore has taken an approach which attended to practices in pharmacy students' learning. In addition taking a methodological approach incorporating the use of artefacts and using art in the analysis of the data, allows many of the concepts explored in this chapter to be enacted in my own research and knowledge construction practices.

2.3.1 Research questions

A number of research questions can be asked based on the literature and on the problematics identified through the researcher's practice.

The study aims to use artefacts to explore pharmacy students' learning in order to try to understand their learning practices in mastering a field of inquiry as well as exploring the impact of assessment and feedback on these practices and the difficulties they experience along the way.

Within this aim a number of research questions can be asked:

- Can the use of artefacts and material objects in the interview process afford access to what learning means to pharmacy students, their learning practices and the assumptions that underpin what it is to master the field of inquiry that is pharmacy?
- How useful are threshold concepts as a conceptual framework for understanding pharmacy students' learning processes?
- What are pharmacy students' assessment practices and how do these influence their learning practices?
- What difficulties do pharmacy students encounter in their learning and how might these be conceptualised?
- How do pharmacy students negotiate the 'liminal spaces' of pharmacy education and deal with uncertainty in the pharmacy curriculum?
- How significant is the affective dimension in pharmacy students' learning?
- What issues need to be considered in designing a curriculum that supports pharmacy students to negotiate the journey to becoming a pharmacist?

3. Methodology

This chapter focuses on the methodology of the study, the methods used in data collection and ethical issues considered and addressed in the design and conduct of the research.

3.1 Methodology Framework

Methodology includes:

> *a general orientation to life, the view of knowledge, and the sense of what it means to be human which is associated with or implied by a certain research method. Methodology is the theory behind the method, including the study of what method one should follow and why* (Van Manen 1994 cited in Koch 1995 p. 827).

The methodology of a study influences the study design which depends on the underpinning ontology and epistemology and the following section describes my 'journey' towards a methodology framework for this thesis.

3.1.1 In search of a conceptual framework.

As outlined above (Chapter 1.3.2), the methodological position taken in this study fits firmly within an interpretivist perspective which is underpinned by constructivist ontology, and is principally concerned with meaning, understanding and illumination. The interpretivist approach, in contrast to positivism's generalisation, prediction and control, which I was familiar with through my professional training, looks for '*culturally derived and historically situated interpretations of the social-life world'* (Crotty 1998 p. 67). Usher (1996 p.18) argues that '*the natural sciences cannot elucidate the meanings of human actions'* and therefore confining

research to the observable and empirical, as a positivist epistemology does, would result in an important dimension within social enquiry, meaning within social interactions, being missed. Since understanding what learning means to students is the core emphasis of this study, a positivist approach (such as from my professional training) would not be appropriate.

Usher goes on to link interpretivism to the underpinning values of enlightenment, understanding and communication (Usher 1996 p.22) and describes how knowledge-formation is conceived as circular, iterative and spiral rather than the linear, cumulative way represented in positivism. One of the main assumptions underpinning interpretivism is that all knowledge is perspective-bound and partial and is influenced by Gadamer's *'pre-understandings'* and *'tradition'* i.e. assumptions, presuppositions, beliefs and practices (Gadamer 1975 cited in Usher 1996 p.19). Interpretivistic research does not usually attempt to generalise but presents data about the way human beings progressively construct meanings about the world in their lives (Scott 2000 p.54). This study did not aim to generalise but instead aimed to present findings about the way RGU pharmacy students progressively construct meanings about their learning and as a result the knowledge produced would be illuminative and situated. As a professional doctorate, situated in my own professional practice, this was appropriate.

The perceived lack of generalisability in interpretivistic research can result in a lack of credibility amongst scientific circles and thus there was

a need to conduct the research in a robust way and present the findings in a credible and persuasive manner to convince the pharmacy scientific community of its validity. In considering this, Maxwell's (2005) explanation of generalisation as internal and external is helpful where *'internal generalisability refers to the generalisability of a conclusion within the setting or group studied, while external generalisability refers to its generalisability beyond that setting or group'* (Maxwell 2005 cited in Flick 2007 p.42). Providing the research was conducted in a robust way internal generalisability should be achievable. If the findings were presented in a 'sufficiently detailed' way in this thesis the reader would be able to judge whether or not the findings might apply in other similar settings, (Mays and Pope 2000 p.52) hence allowing some external generalisability. In terms of achieving robust and credible data the research was designed using Mays and Pope's (2000) guidance on clear exposition of methods of data collection and analysis, reflexivity and attention to negative cases (Tonna and Edwards 2013).

The challenging intellectual journey through ontologies and epistemologies continued during the first year of the research phase of the project. Whilst reading about threshold concepts during this time it was interesting and poignant to read about developing a conceptual framework as a threshold concept in doctoral studies (Trafford 2008) since this was exactly what I was experiencing myself. Trafford's writing did reassure however that this process is an essential part of doctoral research.

In searching for the conceptual framework, although I was assured that the epistemology was firmly interpretivist and that artefacts were to be used in the data collection, the theoretical underpinnings for using these were less clear. A number of perspectives were explored and then rejected during this search for a conceptual framework and the rationale for this will be briefly discussed here.

Symbolic interactionism (SI) was a perspective that appeared relevant since the use of artefacts in the interview design is a technique that fits within that paradigm. The underpinning philosophy of SI as being about how people create meaning during social interaction (O'Donoghue 2007) appeared to fit nicely with the direction of the project. On further reading around SI however (Crotty 1998) concerns developed about the criticisms of SI as superficiality (lacking critique) and that it is unable to deal with social structure and macrosociological issues such as power (Ritzer and Goodman 2003) and as a result this perspective was not used to underpin the research.

Materiality and material culture, a body of work which encompasses the complex relationships between people and objects, was another perspective which appeared to have direct relevance to the use of artefacts within the research. Some of the thinking underpinning this study around practices and learning as dwelling appeared to align closely with the principles underpinning material culture studies in that:

> *objects exist within networks of relations that serve to define, mediate and order them and which in turn are 'acted upon' by such objects and human subjects, affording them purpose and meaning*

> *within a system of social relations* (Law 2002 cited in Woodward 2007 p.16).

Following in-depth reading around this type of research (Woodward 2007), I realised that the desire to use objects within the research interviews was not because of an interest in researching the relationship of the object with a social phenomenon (in this case learning) but rather to use the object as a means to gain access to the phenomenon. In particular, allowing the student to select an object to bring to the interview may cut across some of the power issues around my professional relationship with them (see section 3.4.3 below) and would allow them to articulate the abstract concepts this study aimed to explore. Woodward's comments that *'there is some danger in including all and sundry accounts of material objects within the field of material culture studies, simply because they study objects and artefacts in some way'* (Woodward 2007 p.26) and therefore this theoretical perspective was not engaged with further within the project. Later reading of Ingold's work (2000, 2011) re-emphasised that the dwelling perspective and meshwork concept would allow the research to take account of objects and practices in a more fluid, open and less pre-determined way than the *'standard notion of artefacts as items of material culture'* (Ingold 2000 p.290) would afford.

My concern for the individual student experience, whilst taking account of their learning environment, raised some interesting tensions, for example how to account for the classic dualisms of mind versus body, individual versus social, structure versus agency and also those in the literature on learning around cognitive learning versus situated learning discussed in

Chapter 2. However, as discussed in Chapter 2, Hodkinson, Biesta and James's (2008 p. 30) reflections assured me that there is *'no reason why individual learning cannot be addressed from within a broadly situated or socio-cultural perspective'* and Fenwick's (2010 p.105) assertion that socio-material approaches have the ability to '*unsettle categories that have become problematic conventions'* in learning persuaded me to continue exploring these approaches.

One of the socio-material approaches explored by Fenwick (2010), in relation to work-based learning, is complexity theory. Reading Haggis's work (2004, 2008, 2009) and attending a seminar on complexity theory in education led to consideration of whether this may be a perspective which would allow reconciliation of some of the tensions. Haggis (2004 p.335) uses complexity theory to attempt to address *'some of the difficulties of trying to approach learning as a complex and situated phenomenon'* and although this perspective did appear to offer an approach which may be useful, because of Haggis' and others' (Davis and Sumara 2006) extensive research into complexity and student learning, there did not seem to be an opportunity for originality. In addition, complexity theory could have been interesting to apply but I struggled to see how that would translate into a way of developing my own and others practice in pharmacy education. Taking this approach would also have required an in-depth engagement with a particular philosophical position, albeit one which draws on multiple heterogeneous theories (Fenwick 2010), and as noted in 3.1.2 below, I wished to draw on a range of different approaches in my research.

Similarly phenomonology (Crotty 1998) was another perspective which appeared to offer something to this study as it seemed to sit well with my position as researcher in a power relationship with my students; I would never fully see things from their perspective. This however may have 'cut across' one of the important values underpinning the project of co-creating the data with students as far as was possible within the relationship of power. Like complexity theory, I was aware that effective commitment to phenomonology required in-depth engagement with a particular philosophical tradition of inquiry. Given my commitment to an interdisciplinary perspective which drew on anthropology, sociology and art, I was not prepared to make this in-depth engagement.

Having explored and rejected a number of theoretical perspectives over a period of over 12 months, I made the decision to start data collection and continue this iterative process of finding the theory as data collection progressed. During this period of reading about theoretical research positions, an artefact that represented my feeling of 'floundering in theoretical perspectives' was the U2 song *'No line on the horizon'* (U2 2009). I felt that there was no line on the horizon for me at that stage in my research however was reassured, by Flick (2007 p.68) who states that '*researchers who start a study using qualitative methods … should carefully plan and decide for a research perspective and do* [their] *homework in the planning phase of* [the] *project'*. This reassured me that the extensive reading and planning would result in a well designed and considered project.

3.1.2 Finding the elusive conceptual framework.

During this search for a conceptual framework, I felt resonance with McCotter (2001 p.1) who, in her reflections on her experiences as a beginning researcher, explains that she wanted *'theory to help* [her] *understand, not to help* [her] *pretend to understand, or strike a pose'*. McCotter also describes not wanting to position herself with one theory and also not wanting to create a grand integrative theory rather preferring to use Lather's (1994 cited in McCotter 2001 p.3) approach of *'going freely from theory to theory, taking the way that best suits [her] particular purpose'*. I echoed McCotter's view, not wanting to be pigeon-holed into one particular theoretical approach or a specific author's viewpoint or philosophical tradition and instead decided to use a number of different but aligned theoretical perspectives to design and conduct the research. McCotter also reflects that she would *'get bored and stuck in traffic if there weren't always different roads to choose'* (2001 p.3) which echoed loudly with my own position.

Whilst exploring methodology and different types of research interview design, episodic interviewing appeared to offer a useful methodological underpinning for the way in which the interviews could be conducted. Episodic interviewing is a form of narrative interviewing that *'elicits descriptions of particular episodes or features in the interviewee's daily life'* (Bates 2004 p.18). The technique was developed by Flick and she suggests that the episodic interview should:

> *combine invitations to recount concrete events (that are relevant to the issue under study) with more general questions aiming at more general answers (such as definitions, argumentation and so on) of topical relevance* (Flick, 2000 p.77).

The theoretical underpinnings of episodic interviewing include the nature of memory and the distinction between episodic and semantic knowledge (Flick 1997) which are defined as:

> *Episodic knowledge comprises knowledge which is linked to concrete situations … and semantic knowledge is more abstract, generalised and contextualised* (Flick 1997 p.4).

In terms of the relevance to and application to this study, episodic interviewing offered the opportunity to focus in the data collection using students' episodic knowledge or *'small scale situation based narratives'* (Flick 1997 p. 17) to explore their semantic knowledge i.e. abstract or conceptual issues about their learning which they may have otherwise struggled to articulate. Flick also argues that:

> *episodic interviewing does not give priority to one sort of data like the narrative interview does with narrative data, but wants to use the advantages of different forms of data – episodic and semantic knowledge and narrative and argumentative expressions* (Flick 1997 p.17).

This is an approach which fitted with my preference for finding a balanced perspective therefore allowing me to conduct the research in an open and flexible way, avoiding closing down on one issue too early in the research. The interview would allow for short pieces of narrative interspersed with conceptual discussion and should allow exploration of a number of different aspects of the students' learning experience. In addition, alongside use of artefacts, episodic interviewing also appeared to help address issues of power in the interview (referred to in Chapter 3.4.3). Flick (1997 p.4) suggests that the interview:

> *should be open enough to allow the interviewee to select the episodes or situations he or she wants to recount and also to decide which form of presentation he or she wants to provide (e.g. a narrative or a description).*

Using this approach allowed the participants some choice in how the interview developed, in what situations were explored and as a result lead to a more balanced power relationship within the interview.

In achieving a final conceptual framework, I followed Maxwell's (2005) guidance and created a concept map of all the assumptions, values, theories, research problems and ideas that were informing the project (see Appendix I). Later in the research process I encountered the conceptual theoretical framework being very clearly and succinctly articulated by Ringsted, Hodges and Scherpbier (2011 p.697) as a combination of relevant theory *'that can clarify the underlying mechanisms pertaining to the idea or problem'*, a critical synthesis of the empirical literature *'identifying what is already known and what is not known about the idea to inform the development of a concrete research topic'* along with the *'researcher's individual thoughts and ideas'* and was reassured that I had indeed managed to construct my own conceptual framework. I was also assured that I had managed to *'contextualise, focus, bound and frame* [my] *interests into a manageable doctoral study'* (Edwards 2006 p.7).

3.2 Data Collection

Data collection took the form of individual semi-structured interviews. Interviews in research are perceived as moving '*towards regarding knowledge as generated between humans'* and emphasises the '*centrality*

of human interaction for knowledge production' (Kvale 1996 cited in Cohen, Manion and Morrison 2007 p.349). This fits with my philosophy of knowledge being co-constructed between subjects and aligned with the epistemological stance I took in conducting the study.

3.2.1. Interview design

Participants were asked to select three artefacts (a photograph, an object, a song, a picture or something else) that represented what learning meant to them or what learning was about for them and bring that along to an interview. These material objects were then used along with an episodic interviewing style to elicit their views about the process of their learning and to explore their perceptions and experiences of aspects of the curriculum they struggled with, along with how assessment and feedback impacted on their learning.

The interviews were conducted using an interview plan which was designed during the development phase of the project (Figure 6 overleaf and Appendix II). Presenting the interview plan as a mind map created using MindManager software enabled greater flexibility within the interview than using a linear text based plan. The interview was piloted with one participant who was also asked specific questions about the ease of interpreting the information provided prior to the interview and the process of choosing the objects. The pilot interview was included in the final data set.

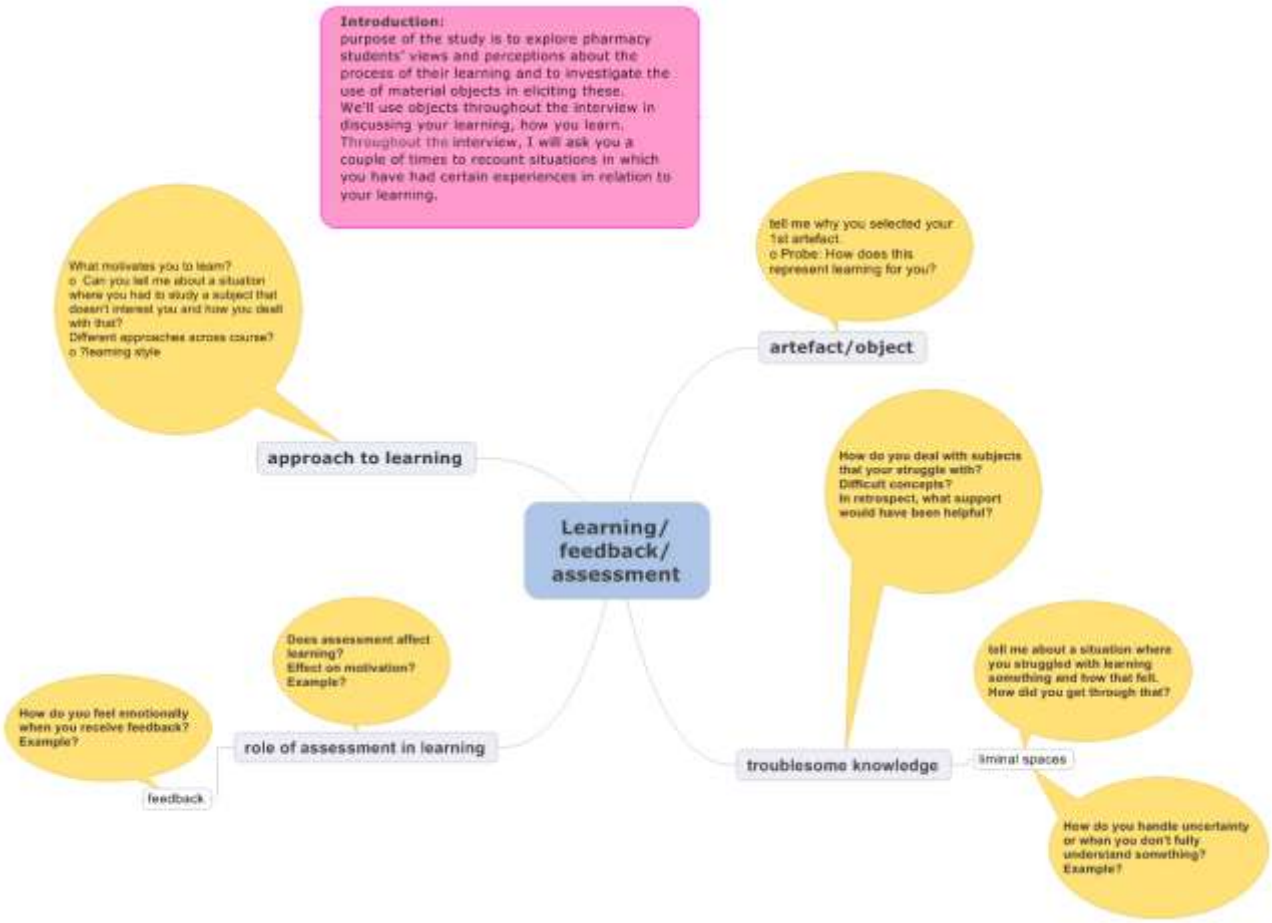


Figure 6. Interview schedule

(See Appendix II for larger version)

The intention at the start of the project had been to conduct a focus group with all participants after the interviews were completed to 'validate' the interview findings and check the interpretations with participants. The individual nature of the reflections shared, the volume of data generated by the interviews and the 'data saturation' that appeared to have been reached, led to focus groups not being conducted.

3.2.2. Sampling

A purposeful sampling method was used (Marshall 1996). Students in each of the four stages of the MPharm who may have been willing to engage with the project were identified through discussion with colleagues. An attempt was made to identify students with a range of

educational backgrounds, a mix of male and female and a range of academic abilities including some who had previously had to resit a module indicating that they may have struggled with a subject area.

A number of students from each stage was sent an invitation email (Appendix III) with an attached information leaflet giving details of the study (Appendix IV) which was designed to comply with NHS ethics guidance (National Research Ethics Service 2009). Students who did not respond were sent one reminder email after 2 weeks and if they failed to respond they were not contacted again. Initially the intention was to interview two students from each of the four stages but following the pilot interview (see 3.2.1.), which only lasted around 30 minutes, a decision was made to increase the number to three per stage. There were particular problems recruiting from Stage 2, so part way through data collection, the whole year was sent the invitation email; no further students responded to this. As a result, the whole of Stage 4 was sent the email and an additional 12 students responded positively; all those who expressed an interest were invited for interview rather than excluding some. Rees and Sheard (2002) describe similar recruitment problems with medical students and argue that being responsive and changing recruitment strategies to increase participation part way through data collection is more ethical than completing the study with poor response rates.

Eighteen students were interviewed over a 6 week period (with 19 interviews conducted including the pilot which was included in the final

data set) and each was given a pseudonym to protect their confidentiality. Table 1 gives the breakdown of participants' pseudonyms, stage, age and previous educational experience.

Stage	Pseudonym	Age	Educational background prior to MPharm
1	Gordon	51	Science degree
2	Jessica	19	School leaver
3	Peter	19	School leaver
3	Dave	29	Engineering degree
4	Debra	26	Science degree
4	Gavin	21	School leaver
4	Kat	22	School leaver
4	Emily	21	School leaver
4	Helen	28	Arts & humanities degree
4	Donna	26	Science degree
4	Ewan	21	School leaver
4	Lisa	21	School leaver
4	Karen	22	School leaver
4	Diane	27	Science degree
4	Victoria	24	Science degree
4	Jill	25	Science degree
4	Georgia	23	School leaver (overseas) & FE College (UK)
4	James	24	Science degree

Table 1. Participants

3.2.3. Conducting and transcribing the interviews

Each participant was interviewed individually. The semi-structured interview plan contained a sequence of themes to be covered along with '*a loose agenda of questions'* (Arksey and Knight 1999 p.82) however in conducting the interview openness was applied to changing the sequence of themes and used additional probing questions in response to the '*stories' told by the participants*' (Kvale 2007 p.51). My experience of the type and number of probes used was similar to Arksey and Knight's (1999 p.83) assertion that '*the list of probes and prompts is as long as the researcher's imagination'*. A standard introduction was used to

explain what the interview would involve and to obtain the participants' written consent to be involved. A consent form (Appendix V) was designed following NHS research ethics guidance (National Research Ethics Service 2009). Throughout the interviews I used the artefacts in a flexible way; I started each interview by asking about their first artefact and ended most with discussion of their third one. In some cases the participants brought the artefacts in to the discussion to illustrate their thoughts and in other cases I prompted them to show me when dialogue on an aspect had come to a natural end.

The necessary skills were achieved through my professional practice and from training on medical interviewing to ensure that the '*interpersonal, interactional, communicative and emotional aspects'* of interviewing (Cohen, Manion and Morrison 2007 p.362) were addressed. Bleakley (2005) argues that the attributes of researchers are central to the quality of narrative inquiry and he posits reflexivity, tolerance of ambiguity, sensitivity to participants and data as critical to people and artefacts being read closely as text. DiCicco-Bloom and Crabtree (2006) also refer to the process of developing rapport in a research interview and Arksey and Knight (1999) assert that an oral history interviewer needs to be skilled at listening and probing. DiCicco-Bloom and Crabtree highlight ensuring respect for the interviewee and the information shared and this was particularly significant given my relationship with the students; during the introduction to the interview I made it clear that information shared during the interview would not be used for other purposes e.g. course related. DiCicco-Bloom and Crabtree also argue that social roles

shape the interview process and that acknowledging and responding to the power differentials that exist requires reflexivity on the part of the researcher. Similarly Higgins (2000) specifically highlights the power differential that exists between tutors and students in the HE context and argues that tutors have the *'legitimate means to exert control over students through their academic authority'* (p.2). I have attempted to bring these issues to the foreground in my research design and have made an explicit point of attempting to *'integrate reciprocity into the creation of knowledge'* (DiCicco-Bloom and Crabtree 2006 p. 317) throughout the study. As will be discussed later in this chapter (3.4), I was particularly explicit with participants that their involvement or any subsequent withdrawal from the study would not affect either my relationship with them as their lecturer or their educational future.

I was also conscious of the environment where the interview would take place. Elwood and Martin (2000 p.649) present an interesting discussion of the implications of selecting an interview site, arguing that the site itself *'embodies and constitutes multiple scales of spatial relations and meaning which construct the power and positionality of researcher and participants'* and I was careful to consider this in designing the project. The most practical option for me was to conduct the interviews in my office; I knew I would not be disturbed there and would be comfortable. The trial interviews that I conducted during Module 4 took place in my office and I asked participants how they felt about it taking place in 'my space'. Neither felt intimidated by this but both were students who knew me reasonably well. I felt, however, that participants may relate my

office to our tutor-student relationship and therefore a relatively neutral space, a meeting room elsewhere in the School that was quiet enough for audio recording, was chosen to attempt to establish a *'safe and comfortable environment for sharing the interviewee's personal experiences and attitudes as they actually occurred'* (DiCicco-Bloom and Crabtree 2006 p.316) thus again attempting to take account of the power relationship between us.

Interviews were audio recorded using a digital audio recorder. Merton (1956 cited in Cohen, Manion and Morrison 2007 p.364) comments on the tendency of taping to *'cool things down'* however I struggle to take notes and listen at the same time and felt that the depth of analysis required needed an accurate record of what was said. Digital photographs of the artefacts that the participants had selected were taken.

The first few interview recordings were transcribed verbatim by me directly into MindManager software and the remainder were transcribed by an experienced audio-typist into MS Word and then I transferred them to MindManager. Using mind-mapping software rather than a word-processing package or bespoke qualitative analysis software (e.g. NVivo) had the advantage of making use of the interview plan mind map (Appendix II) and allowed the analysis process to start during transcription. Mindmapping is a thinking tool underpinned by the concept of *'radiant thinking'* (Buzan and Buzan 2000) where associative thought processes radiate from a central idea, allowing concepts to be integrated

and connections to be made. Tattersall, Watts and Vernon (2007 p.33) argue that *'the process of transcribing using a mind map will allow creative thinking, with links being made between themes or statements in real time as the transcribing goes on'* and this was my experience of transcribing into MindManager. Tattersal *et al.* (2011 p.20) further assert that it may be 'naive' for researchers to be objective and non-judgemental during data collection and perhaps that accepting that analysis begins at the interview stage and embracing this subjectivity by using mindmapping may be more realistic. I felt that this echoed with my attempts to be aware of and foreground my own subjectivity.

3.3 Data Analysis

Data analysis continued using mindmapping as a tool. An initial analysis map was created (see Appendix VI and VII) linking the participants' objects to emergent themes. These themes were then divided into individual maps corresponding to each chapter and further detail and analysis was added. Gibbs (2007) describes the process of coding qualitative data, starting with descriptive codes then moving to analytic codes and I applied this process to my data analysis taking a combination of data-driven and concept-driven approaches described below.

In the analysis, my intention was to deliberately mobilise a range of theories in order to *'cause trouble, provoke* [and] *be awkward'* (Woolgar *et al.* 2009 cited in Fenwick 2010 p.105). Different analytic frames have

been used in Chapters 4, 5 and 6 and there was no intention to integrate these theories, which were developed as separate ideas.

Analysis for Chapter 4 concentrated on the artefacts participants' brought and the meaning they ascribed to them. The approach was data-driven initially using mindmapping (Appendix VIII), then used Law's (2004, 2009) concept of practices and collateral realities and Ingold's (2000, 2011) concept of dwelling to make sense of the analysis. A number of different conceptual directions could have been taken in the analysis of these objects by following emergent themes. Some of these have been explored further and others have simply been acknowledged to allow for more in-depth analysis of the data in the following chapters.

Analysis of data for Chapter 5 involved exploring the themes relating to assessment. Initially, thematic analysis of the data was carried out using a data-driven approach and mind-mapping (Appendix IX) then Pierre Bonnard's art was used as a 'lens' through which to view the data. I attempted to juxtapose the ordered and structured 'scientific' concept of assessment with fine art to seek new insights into participants' experiences by comparing the themes to specific paintings by Bonnard. Although there is a link between Ingold's (2011) discussion of painting and drawing and Bonnard's way of working, these were initially developed as separate ideas and the connections emerged later as the analysis progressed.

Analysis for Chapter 6 took an initial narrative approach followed by a concept-driven approach. Prior to taking this approach, a mind-map was created to code the issues that participants struggled with. Unlike previous chapters however, this was not found to be a helpful way of exploring and analysing these data and reducing it to themes appeared to cause the participants 'voice' to be lost. Returning to the transcripts and using coloured pens to highlight areas where struggles were discussed and the stories that participants told (a more narrative approach), allowed the issues of importance to emerge. These stories were then grouped according to Steiner's (1978) conceptual categorisation of difficulty.

3.4 Ethical Considerations

This study was conducted in accordance with the following codes of conduct:

- Royal Pharmaceutical Society of Great Britain Code of Ethics for Pharmacists and Pharmacy Technicians (Royal Pharmaceutical Society of Great Britain 2007b) and the subsequent General Pharmaceutical Council Standards of Conduct, Ethics and Performance (General Pharmaceutical Council 2010).
- British Educational Research Association's Revised Ethical Guidelines for Educational Research (British Educational Research Association 2004)
- Scottish Educational Research Association's Ethical Guidelines (Scottish Educational Research Association 2005)

- Robert Gordon University (RGU) Research Ethics Policy (Robert Gordon University 2004a) and RGU Research Governance Policy (Robert Gordon University 2004b).

The study was approved by University of Stirling School of Education Research Ethics Committee and by Robert Gordon University Research Ethics Committee.

There are a number of specific ethical issues which I was cognisant of throughout the project design and execution; my dual role as lecturer/researcher, informed consent, the power differential, inclusion/exclusion of students and confidentiality.

3.4.1. Dual role conflict

As described in 3.2.2, I was acutely aware of the '*dual role conflict'* (Hammack 1997 p.249) which existed in conducting this study. Hammack argues that '*researchers have an obligation to the field to which they seek to make a contribution'* (p.250); however as a lecturer, I also have a professional obligation to my students. As a result the design and conduct of the research needed to take account of both these obligations, without compromising either. My prime concern as a lecturer is for the students' learning experience and therefore the research could not inhibit students' learning. Conversely the students' learning should not compromise my ability to make a contribution to the knowledge of how pharmacy students learn.

3.4.2. Informed consent

The issue of informed consent was an important ethical consideration; as discussed in 3.2.2, an information leaflet was provided to help students decide whether to participate (see Appendix IV) including information on the purpose of the study, why they were invited to participate, whether they had to take part (i.e. they did not), what would happen to them if they took part, what the possible benefits are of taking part, assurances of confidentiality, what would happen to the results of the research study and contact details. More importantly, there was assurance that their decision whether or not to participate would not alter their '*right to or quality of service'* (Hammack 1997 p.256) they would otherwise receive i.e. declining to participate would not affect their academic relationship with me. In addition a separate contact within the School of Pharmacy & Life Sciences was included, should students have any concerns about the project which they felt unable to address with me, along with information of their formal right to complain to the Head of the University of Stirling, School of Education if they had any concerns about the research process.

3.4.3. Power

As discussed elsewhere in this chapter, awareness of the power differential that existed between researcher and participants was important; as the participants' lecturer I was in a position to influence on their '*educational and occupational futures'* (Hammack 1997 p.257). Sensitivity to this was exercised, for example by conducting the interviews in a 'neutral space' rather than my office (as discussed in

3.2.2), by considering any limitations this relationship caused and by being responsive to the effect on the data produced. Also, as mentioned previously, the specific method adopted acknowledged power issues in generation of the data.

3.4.4. Inclusion and exclusion

There are other ethical issues that were considered around non-participation; was the intervention itself likely to be beneficial to a student's learning and therefore by excluding some students, would these students be put at a disadvantage? This issue could not be fully addressed as it would be impossible to invite all 500 MPharm students to participate. As described in 3.2.2, the sampling method evolved to involve inviting all Stage 2 and all Stage 4 students to participate and the decision to include all students who responded positively was based on consideration of this ethical issue.

3.4.5. Confidentiality

Confidentiality was important as the research was conducted with individuals rather than groups; participants were assured of their confidentiality at the start of the interview. Care has been taken in the presentation of data, not to include any identifiable information on students or on confidential information they revealed e.g. views on academic staff. Participant confidentiality has been maintained by the use of pseudonyms throughout. Since this study was conducted in my own workplace, the institution could not remain anonymous.

4. Objectual practices: a spider's web of un-noticed practices

> *If knowledge comes from the impressions made upon us by natural objects, it is impossible to procure knowledge without the use of objects which impress the mind* (Dewey 1916 p.217-218).

In this chapter, Ingold's (2011) idea of animic ontology will be drawn upon. Ingold describes this as the way in which *'beings do not simply occupy the world'* but rather *'inhabit it and in doing so ... they contribute to its ever-evolving weave'* (2011 p.71). Ingold's approach draws on cultural traditions incorporating his anthropological approach to studying small scale communities and minor philosophical traditions, offering alternative approaches to thinking about learning in pharmacy. Participants in this study were asked to bring to their interview three artefacts that symbolised what learning meant to them and throughout this chapter I will explore how these artefacts represent the practices enacted by participants and how these contribute to the '*ever-evolving weave'* of these participants' worlds.

In earlier work, Ingold (2000) describes how his thinking about the ways in which humans inhabit the world has moved from considering the inter-relationships between people and their environment as a 'building perspective' to that of a 'dwelling perspective' (p.172). He explains how considering human beings' inter-relationships with their environment as 'dwelling' allowed him to move away from a Cartesian duality of humans as biological organisms (and the consequent implications for their relationship with the environment) intentionally motivated (implying an

entirely different relationship) (p.172-3). Since this study concerned, not the final product of the pharmacy degree i.e. the graduate, as other research has done, but rather the *'ongoing processes of* [participants'] *existence'* (Ingold 2011 p.70) as pharmacy students, Ingold's dwelling perspective was an approach to the data that appeared to offer a way of resolving the concerns about dualisms in learning discussed in Chapter 2. This radical challenge to the Cartesian way of dividing the distinctions between the subject and object provided an alternative to the many dualities in learning presented elsewhere in the literature. Plumb (2008 p.62) argues that the benefit of thinking about learning as dwelling is that it avoids the *'strictures of dominant cognitivist and individualistic notions of learning'* but at the same time allows us to *'avoid the relativism and abeyant liberalism of postmodernism'* (p.62). These arguments resonate with my own concerns (expressed in Chapter 1 and 3) about considering learning only as an individual cognitive experience and also with my discomfort with the absolute relativism of some postmodern conceptions of learning. Plumb (2008) goes on to assert that adopting Ingold's dwelling perspective on learning is a practical engagement with the world, *'a process of intertwining that privileges neither agency nor structure (neither the rational subject nor the constituting social context)'* (p.69) and this chapter will relate this perspective to pharmacy students' learning.

In considering the relational constitution of being illustrated by the dwelling perspective, Ingold (2007 cited in 2011) refers to a meshwork of '*trails along which'* (p.69) an organism's life is lived. He explains that

people likewise *'extend along the multiple pathways of their involvement in the world'* (p.70) and that they are *'knots in a tissue of knots'* (rather than *'nodes in a network'*) *'whose constituent strands, as they become tied up with other strands, in other knots, comprise the meshwork'* (p.70). In this chapter, Ingolds concepts will be used to explore how participants' learning is constituted through the ever-evolving weave of that meshwork.

Each of the objects brought by the participants in this study opened up a meshwork of themes with many different possible strands, going in multiple different directions, that could have been explored in this thesis. Choices have had to be made however about which strands to travel along and which to leave tangled and unexplored. Had artefacts been the sole focus of this work, more of these strands could have been explored in depth however the focus in this study is not just the students and their learning, but also assessment and their struggles in learning and therefore these other research questions, which will be dealt with in later chapters, constrained the space available to explore multiple strands further. Using artefacts has afforded access to participants' practices around their learning and it is these practices which will be explored further here. In this study the particular focus is on the multiple practices that together constitute pharmacy students' learning (Law 2009).

In order to present these objects, the meaning ascribed to them by the participants and the practices they represent, the artefacts were grouped together into themes: objects that represented study techniques or

strategies that they adopted, objects that represented rituals associated with learning and studying, pharmacy's knowledge represented for many participants by one particular object (a textbook), objects that represented where participants' motivation for learning came from and objects that represented specific ideas about how they learned. A mind map of participants and objects is presented in Appendix VII and one of the analyses for this chapter is presented in Appendix VIII.

4.1 Study practices

The majority of participants brought along objects that represented study or revision practices. For many of them, coloured pens, post it notes, mind maps and summary notes were the first object that represented learning for them.

Figure 7. Coloured pens (Ewen, Stage 4, object 1)

Ewen considered a *'good set of coloured pens'* an essential tool for him and he described how the practice of colour coding different aspects of a subject made it *'a lot easier to understand'*. He and many others recognised that use of colour and mindmaps helped them in their learning practices.

Figure 8. Mind map and coloured pens (Debra, Stage 4, object 1)

Debra likewise brought a mindmap and her coloured pens. The use of colour and summary techniques may be a study practice indicating complexity reduction; grouping ideas together to increase clarity and reduce the complexity of the concepts being studied. Donna explained it made everything '*more manageable'* and that she could *'kind of visualise things with colours and in her own writing'.* Cahill and Fonteyn (2008) discuss how mindmapping can help in exploring relationships between concepts and in finding meaning and in a small pilot study of 9 nursing students, and concluded that the technique *'improved students' thinking about patient data'* (p.490). Farrand, Hussain and Hennessy (2002) concluded, after conducting an intervention study with 50 medical students, that mindmapping needed individual motivation towards the technique for it to be effective. In this study, some participants described their motivation for mind-mapping practices, which they believed to be effective for them, whereas others did not mention these types of practices.

The strategies represented by colour and note-taking in this study may indicate ordering and sense-making practices where the participants categorised different threads and it is the inter-relationship between participants and these artefacts which generates these practices.

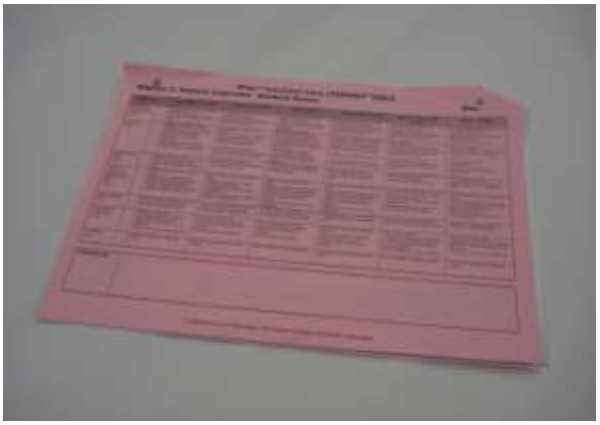


Figure 9. Assessment criteria (Diane, Stage 4, object 1)

Diane used published assessment criteria to help her focus on what she needed to learn; *'if I know what I'm … going to be examined on then I can zone in quicker on what I need to learn'*. In contrast to the ordering practice represented above, Diane works towards published criteria written by academic staff and appears to be aligning herself with a pre-given order using the criteria to define her own learning practices.

Hargreaves (1997 p.403) argues that student learning and assessment are inextricably linked and that *'assessment exerts a major influence on their approach to learning'*. In a review of innovative approaches to assessment in one institution, Hargreaves concludes that assessment plays a key role in the learning process and that conventional assessment practices do not encourage critical thinking, learning for understanding or for lifelong learning. Boud (1995 cited in Hargeaves 1997) refers to the

commonly held assumption that assessment measures learning but does not influence it. The influence of assessment on participants' learning practices will be explored further in Chapter 5.

In Diane's case, this practice of focussing on assessment for directing her learning allowed her to feel prepared and she believed she knew how she would be assessed, allowing her to ensure she met the criteria; '*… I know what I'm going to be examined on them I can zone in quicker, on what I need to learn … see exactly what* [staff] *are looking for … to know that if I've kind of hit on all of those points, then I'm going in the right direction*' (Diane). It could be argued that her learning was constrained by the parameters defined by the assessment and that she may have restricted her opportunities for wider personal development. Biesta (2009) argues that the process of individuation and development of 'subjectification' is an important function of education and arguably by focussing her learning practices on assessment criteria, Diane may be missing out on aspects of her development.

The practice of directing learning using assessment criteria links to Twenge's (2009) discussion of issues to be considered by educators in relation to educating 'Generation Me'. Twenge has published extensively on generational changes and has amassed data on American young people spanning decades of research and has drawn some generalised conclusions about the current generation of students; whom she labels 'Generation Me' (Twenge 2006). Twenge (2009) asserts that this generation need to be given structure and precise directions linking to

using assessment criteria to direct learning. The decline in self-reliance that Twenge (2000) observes in her data is suggested to be due to careful supervision by their parents and means that they *'like to know exactly what they need to do to earn good grades and they become stressed when given ambiguous instructions'* (Twenge 2009 p.403). Although Diane does not express this anxiety in relation to her learning practices, Gavin explains he struggled when he did not understand how much to justify; '*… last year … we were always told … that you had to justify and keep justifying, say why, why, why and everyone kept saying why … nobody understood to the extent that you should justify, and everyone kept saying 'why wasn't there a model answer* [available]*'.* These issues of assessment will be picked up again in Chapter 5 and participants' struggles will be explored further in Chapter 6.

Linking again to assessment, Lisa and Helen both brought diaries as objects that represented their organising practices.

Figure 10. Diary (Helen, Stage 4, object 2)

Being organised and prepared was really important to Helen and although she aimed to *'be really good and take a balanced approach in doing a*

little bit of everything every week' she found that her schedule was often dictated by assessment deadlines.

For Lisa, who described her motivation as coming from friends and family, the diary also represented a link with the world outside her studies; *'you can't just learn, you can't just, like, struck yourself off from the whole world, just to physically study for four years … I can honestly say that I've not forgotten … no I've forgotten one person's birthday over the four years and that's because it was like in February and we had a big exam or something … because it wasn't in my diary … other than that I've not forgotten one birthday or one thing that I should be doing.'* Again this represents the multiple influences on students' learning and links to Ingold's (2011) conception of a life lived along the multiple lines of a meshwork. These complex influences and 'strands' of students' learning practices may often be forgotten by those attempting to support students in their studies.

For a number of participants, objects brought along represented spaces associated with learning, for example Peter brought a picture of his desk (see 4.2 below).

Figure 11. Library silent study area (Karen, Stage 4, object 3)

Figure 12. Earplugs (Jill, Stage 4, object 3)

For Karen, the silent study area in the library represented the place where she always studied and Jill brought a pair of ear plugs to represent how she needed silence to learn wherever she was studying. Blocking out noise is another example of a complexity reduction learning practice i.e. limiting the meshwork or the complexity of strands to allow sense-making to happen.

Karen also discussed how she and a friend had developed a practice of learning half a subject really well and then teaching each other. Donna likewise discussed how she and her friend *'talk it all out'* once they had created their individual mind-maps or note cards and that they had developed this practice while studying together on a previous course. Both reflected on how this practice of peer learning seemed to work really well for them; *'I found that it really helped my grades'* (Karen). Donna felt that it helped her and her friend contribute ideas and strengthened both their learning; *'it's less boring I suppose that you're actually having*

a conversation with somebody about it and it's a way of remembering it better … well we found it is' (Donna).

Topping (2005 p.631) defines peer learning as *'acquisition of knowledge and skill through active helping and supporting among status equals or match companions'* which interestingly aligns with the acquisition metaphor discussed in Chapter 2, perhaps unsurprisingly as Topping appears to be working from a cognitive psychology perspective. Peer learning is a current focus in the literature and Boud, Cohen and Sampson (1999) argue that there are several reasons for its growing use in HE. The first and most pragmatic reason is financial and relates to rising students numbers in HE. These funding pressures have grown in the 20 years since Boud, Cohen and Sampson wrote about this so this is just as relevant today. Alongside funding pressures, *'reassessment of the goals of university courses'* (1999 p.415), and the skills agenda discussed in Chapter 1.3.2 have emphasised the skills of collaboration and communication which may be fostered in peer learning. The third reason, Boud, Cohen and Sampson argue, is to do with changing values in HE around inclusivity and that *'collective forms of learning may better suit some students'* (p.415). These authors' arguments relate to peer learning organised as part of the curriculum whereas, peer learning practices discussed by Karen and Donna (and the social interaction discussed by others in 4.4) were on their own initiative. These practices, whoever they are initiated by, appear to be an important aspect of the meshwork of their learning. Topping (2005 p.631) refers to the *'social and emotional gains'* of peer learning and this echoes strongly with participants'

experiences in this study. The peer learning practices they describe more closely align with learning as participation or knowledge creation than the acquisition perspective implied by Topping's definition.

Karen also explained that she and her friend only use the learn half and teach half practice for certain modules; *'… we obviously can't do it for … for CPT* [clinical based modules] *we do all that ourselves and we just discuss it or whatever.'* The rationale for why this practice was only applied in some modules was perceived relevance; *'... for CPT, I feel I really need to know it because that's what I'm going to be doing in the future.'* This idea of perceived relevance to participants' future career will be explored further in Chapter 6.

A number of participants brought iPods and music as artefacts that represented learning for them and explained how they play music while studying.

Figure 13. iPod (Jessica, Stage 2, object 1)

Jessica discovered whilst preparing for school exams that the practice of listening to music whilst studying helped to learn. She found that she was listening to specific albums when studying different subjects and realised that she now always associated those songs with that subject; *'it kinda works like a trigger for me'*. She recognised the soothing and emotional effect that music had on her; *'… human physiology was the subject that I hated in first year pharmacy … well I was most interested in it but I just found it the hardest so I chose my favourite album because it was the most, like, calming thing that I had.'* Jessica also explained that she is very musical and perceived a link between this and her learning practice. Lisa also had different playlists on her iPod (with different genres of music) for listening to whilst studying various subjects and she found this motivated her to study; '*there was a playlist that I listened to ... over and over again ... they're motivational songs without ... they weren't meant to be motivational songs.'*

These various objects representing study techniques suggest that participants have developed study practices to suit their own way of learning and these practices help them in managing the meshworks surrounding them. Participants described how these practices had evolved throughout their educational life; in some cases consciously; *'… it was kinda accidental when I was studying for standard grades ... but then I thought oh, that's quite a good way of me managing my time for each subject'* (Jessica). For others, practices had evolved unconsciously; *'I don't know why, it's just something I've always done'* (Victoria).

Most of the literature on student learning abstracts from specific practices without any further explanation of how these are carried out. The practices discussed by participants in this study emphasise that learning is a far more complex, managed and multiple set of practices than is usually acknowledged in the literature.

4.2 'Rituals' associated with learning and studying

A number of participants recognised the 'rituals' they associated with learning. In most cases they had not consciously been aware of these before being invited along for the interview.

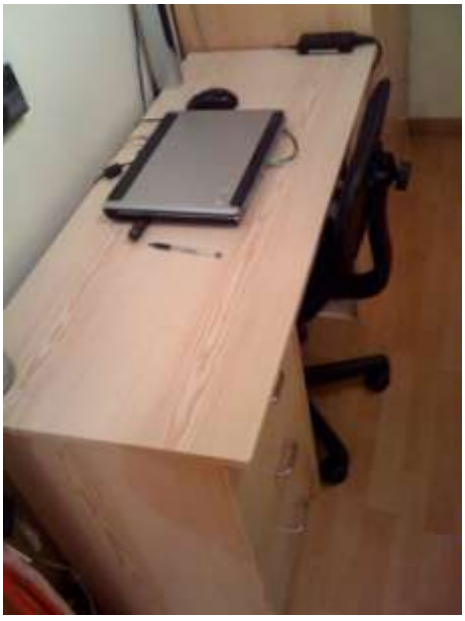


Figure 14. Desk (Peter, Stage 3, object 1)

Figure 15. Nuts (Peter, Stage 3, object 3)

Peter only used the desk in his bedroom for studying where it was completely clear and he was *'really focused'*. He also only ate nuts when he was studying! On probing further he reflected that he only used his

desk for assessments, which he associated with examinations and with *'forced learning'* and compared this to his practice when completing other types of assignments; '[For an essay] *I'll take my laptop through to the kitchen and I'll sit with my mum or dad or whoever's through. I'll sit and read through there but if it's for an exam, I am in my bedroom by myself, sort of at that desk.'* He also admitted he had not realised this practice before considering what to bring to the interview.

Figure 16. Green pen (Victoria, Stage 4, object 1)

Figure 17. Polo mints (Victoria, Stage 4, object 3)

Victoria brought a couple of objects that she *'can't do without'* when studying. She felt she *'can't do anything without a green pen'* and *'even in an exam …* [she] *always write*[s] *out the question in green pen.'* She reflected that it is her way of focusing on reading the question and explained that this is a strategy that she developed early on in secondary school; again another way of managing or limiting the meshwork surrounding her. Like Peter, Victoria only eats Polo mints during *'exam time'* often using them as a mini goal whilst studying; *'if you learn this paragraph or if you go through this, then you can have the sweet'*

perhaps representing both intrinsic and extrinsic motivation (see 4.4 below).

Jessica described how having music on while studying as discussed in 4.1 above, had *'… kinda become like a ritual when I'm studying now. I have to have it on.'*

Figure 18. Calculator (Gordon, Stage 1, object 1)

Gordon brought his *'old calculator'* which he bought when he had first studied in the 1970s and described it as an *'amulet'* which he had always had with him and that it *'sums up* [his] *whole educational life.'* He described how, when he started *'to get distracted or … lose faith in things, I look at this and think well this trusty friend has been with me all … this time; it will get me through again.'* He also laughed about now being unable to read the data card without his reading glasses!

Coffee was an artefact which represented learning for a number of the participants but held several different meanings for them. Victoria and Helen saw the practice of drinking coffee with friends as a ritual or 'distraction' associated with studying for exams representing the social

aspect of the 'meshwork' surrounding students' learning. Coffee also represented motivation for some participants (see 4.4 below).

Participants recognised these objects as rituals associated with studying and used terms such as *'always'* (using green pen) and *'only'* (eating nuts at exam time). They also expressed how emotionally attached they were to these ritual objects using phrases like *'I'd be mortified if I lost it'* (Gordon's calculator) and *'I wouldn't be able to go in and answer an exam question without writing it in green pen'* (Victoria). This affective dimension of learning and how it impacts on students' learning practices is explored further in Chapter 5 and Chapter 6.

Law describes these unintended aspects of practice as 'collateral realities' i.e. *'all those realities that get done along the way, unintentionally'* (Law 2009 p.13). His argument is that enactment of these collateral realities holds practices steady and allows *'choreography of relations'* (p.13). In allowing participants in this study to articulate and make explicit these practices, what is being done along the way, quietly and incidentally has been foregrounded allowing them to reflect on their learning practices and perhaps acknowledge the significance of these practices. Law argues that these collateral realities may be more or less successful in holding different versions of reality together and for pharmacy students this may mean more or less successful learning practices or a more or less successful understanding of their own practices.

This concept of paying attention to what is being done unintentionally is one that is not addressed in the literature on studying and in 'traditional' approaches to how to learn. Having an awareness of these seemingly insignificant aspects of individuals' leaning may help those supporting students to enable them to develop successful learning practices. Interestingly all the artefacts brought along represented positive learning practices i.e. things that participants believed helped their learning. This may be due to my dual role as researcher and tutor and that participants perceived they should bring something that helped them learn. Perhaps it could also be because all the participants interviewed were academically able (they had achieved the grades required for entrance to Pharmacy) and successful in their studies (they were progressing through the course). This method may also be helpful in identifying practices that get in the way of learning i.e. with those who do not succeed in their studies and this will be discussed further in Chapter 7.

4.3 Pharmacy knowledge

Four participants brought along their British National Formulary (BNF) as an artefact that represented learning as a pharmacy student; Debra described it as her *'trusty old BNF'* and felt that it would represent learning for the rest of her life. For her it appeared to symbolise the 'object' of pharmacy's knowledge; the drug or medicine (Harding and Taylor 1997); '*This is our Bible and this is the whole reason I am here.'*

Figure 19. BNF (Debra, Stage 4, object 2)

For Kat the BNF was a more negative representation of *'not a very good kind of learning'*; for her the knowledge represented by the BNF was one she achieved by rote learning which she did not enjoy.

Western education practices have downplayed the role of rote-learning linking this to 'surface learning' approaches to study (Marton and Säljö 1976) which are not usually associated with learning for understanding. Research conducted in Asia, however (Kember 1996) exploring the paradox of high performing Asian students who rely heavily on memorising, has shown that understanding can be achieved through memorising and that rote-learning is not always the negative practice perceived in Western Culture. Entwistle and Entwistle (2003) also explored the relationship between memorisation and rote learning with understanding and warn against *'too ready a linkage of intention to any specific processes in student learning'* (p.19) highlighting complexity of the interplay in learning processes, memory and understanding.

For Donna, the BNF represented a condensed source of information which she found useful in learning about drugs but she recognised that the black and white text was less useful than a summary textbook which used colour to categorise, linking to their practice of using colour (see Chapter 4.1). James brought the BNF to represent books in general, explaining that he used books a lot in learning, with the BNF being the one he currently used the most; *'you can't beat a good book'* (James).

Kat and Donna's view of the BNF could be argued to resonate with Hirst's representations of pharmacy discussed in Chapter 1. Hirst presents 'Pharmacy' with a *'clinical and authoritative atmosphere made cheerful by the colourful apothecary bottles'* (Manchester 2009 p.1) but contrasts this air of order with a more sinister underlying message of danger and death. Donna's conception of the BNF representing order, structure and condensed knowledge portrays one side of Hirst's representation with Kat's negative view of the type knowledge it represents perhaps more akin with Hirst's sinister representation. Manchester (2009 p.2) goes on to describe how:

> *for Hirst, medicine, like art, provides a belief system which is both seductive and illusory.* [Hirst] *has commented: 'I can't understand why some people believe completely in medicine and not in art, without questioning either.*

Kat appears to be questioning the knowledge and learning represented by the BNF and goes on later to describe the type of learning which she sees as positive (4.5 below).

Although not part of the data analysed for this thesis, during the trial interviews conducted during the taught modules, the participants brought

a BNF to their interviews. Jen used it to represent how her learning had progressed during her studies i.e. she relied less on it as a source of information as a Stage 4 student than she had early on in her studies representing a transformational development. Waterfield (2010 p.51), in his discussion of the relationship between pharmacy knowledge and professionalism, describes the difference between information (facts) and knowledge, requiring *'complex assimilation, cross referencing, and analysis of many different types of information'*. Harding and Taylor (1997 p.554) take this issue further by arguing that the social object of pharmacy is the symbolic transformation of a drug into a medicine and a pharmacists' role is to '*inscribe prescribed, or purchased drugs with a particular meaning for the user'*. They later (Harding and Taylor 2002 p.604) describe being a pharmacist as *'more than possessing specialist knowledge.* [Instead requiring] *a skilful handling of this knowledge in practice'*. Jen's use of the BNF may represent less reliance on 'information' and more on integrated pharmaceutical 'knowledge' practices showing a level of professional development which could be anticipated in the final stages of the course and aligns with the development of practitioners ready for a rapidly changing professional practice. Kat's representation of the BNF as '*not a very good kind of learning'* may represent a frustration with the fixed and factual 'information' aspect of pharmacy knowledge rather than the 'knowledge practices' which she referred to positively later in the interview (see 4.5 below).

4.4 Motivation for learning

Many of the participants brought along objects which represented where their motivation for learning came from. An important motivator for many participants was their family; quite a number of them brought a photograph of their family which they quite often pinned up above their study area to keep them focussed.

Figure 20. Family photo (Debra, Stage 4, object 3)

For some participants the motivational phenomenon was the love and support that their family provided which helped when they were struggling with studies; *'it kinda reminds why I am here and the support that I have from my parents ... my mother's always encouraged me to do what I want to do and to better myself'* (Debra). For others it was the sacrifices their family had made to send them to university which kept them motivated; *'mum and dad worked really hard to get to where they are now and to get to the point where they could afford to give me and my brothers and sisters this opportunity to go to college. When I'm struggling, I look at a photo of my mum or my dad ... think how lucky I am to have this opportunity ... and give myself a kick up the backside'* (Jill). Emily described a very close relationship with her parents and

sisters and felt that she didn't want to let them down; '*… it's the picture of my family and my boyfriend and just whenever, like probably whenever I have a hard time in Uni and anything like that I just kind of think, well I'm their … well I'm the biggest sister out the two of them and I'm showing an example to them and just doing it for my family.'*

Participants recognised the emotional effect these phenomena had on them and their learning practices. Aggarwal and Bates (2000), in their study exploring the relationship between approaches to study and life-long learning attributes in pharmacy students, identified 'pressures' as an extrinsic motivator towards learning. They note familial, institutional and personal pressures as important but use of the term pressure implies a negative emotional aspect as opposed to the positive emotional effect expressed by most of the participants in this study. As discussed earlier this may have been influenced by my dual role; my role as a tutor may have had some bearing on what participants chose to present to me.

Like Lisa (see Chapter 4.1 above) and her motivational playlists, Peter described the motivational effect that a particular song had on him and brought along a picture of his iTunes page showing how often he played that song compared to others.

Figure 21. Song (Peter, Stage 3, object 2)

Peter recognised the emotional impact this song had on him; *'quite often on the bus on the way home as well, it's a long journey, that song comes on, like maybe I plan like … I'll go get a shower and I'll just maybe watch TV and then go to bed but then it'll come on and I actually feel like … maybe I might go to the gym or I might go out running.'* He explained that it wasn't the words that motivated him but that *'it's just a good song for me. It just makes me feel more enthusiastic'.*

These affective dimensions of learning appeared to be a recurring theme with a number of participants, although sometimes not explicitly expressed or recognised by them. The affective dimensions of learning will be explored further in Chapter 5 and 6.

A number of participants described social interaction and peer support with friends as a major motivating factor in learning, again illustrating the complexity of the meshwork surrounding students and their learning. This is not a new idea; Dewey argued at the end of the 19th century that education and learning are social and interactive processes (Dewey 1897)

although the technologies by which this interaction now takes place and the practices involved are different in the 21st century. Participants represented social interaction with various objects: a photo of friends, a photo of a rugby ball and bottle of champagne, a mobile phone and a photo of their Facebook page.

Figure 22. Mobile phone (Victoria, Stage 4, object 2)

Figure 23. Facebook page (Gavin, Stage 4, object 3)

For Victoria and Gavin, a mobile phone and Facebook page represented the practice of keeping in contact with their peers while they were studying and both of them felt this kept them motivated and focussed. Victoria always had her phone on silent on her desk; *'the phone is always on the desk. I'm waiting for it to light up for a distraction or a break'*. Gavin always had Facebook open on his laptop whilst studying; *'… it's always there and every so often you can just kind of flick back to it and kind of read through whatever's happening … also around exam time … everyone was on Facebook the whole time because … the majority of the people … that are on … are studying at the same time, so it's just kind of*

a break to chat to more people who are studying and then go back to your work' (Gavin).

This social interaction using such technology is one which is unique to the current generation of students. Communication by text and online is so much a part of their ongoing practice that, what might be a complete distraction to older generations, appears to be a fully integrated part of their learning culture. Where previous generations would have met up for a chat and a break face-to-face in the library, the current generation catch up online; *'... talk to some people* [on Facebook] *and just kind of … every hour so that you can, at least, have a break'* (Gavin).
There is also growing anecdotal evidence of these technologies being increasingly important in how the current generation generate ideas and that they are not just being used for social purposes. This links back to the knowledge creation metaphor discussed in Chapter 2 in that these artefacts are acting back on the learner alongside the relationships that these foster, to create knowledge.

Twenge (2009 p.403) describes how the current generation of students *'attempt to multi-task doing homework while surfing the web and exchanging instant messages with friends'* rather than sitting quietly with a book as previous generations would have done. She argues that the word 'attempt' is significant as cognitive psychology has demonstrated that multi-tasking is a poor strategy (Pashler 1998 cited in Twenge 2009); however this practice appears to be a reality that educators may

need to accept and work with in a constructive way rather than try to change.

Karen represented social interaction and peer support with a photo of her friends. She described how she *'learns a lot from people'* and she, Donna and James all explained how supportive the practice was of working as part of a self-selected group of other motivated students comparing their responses to case studies in problem-based learning; *'… everybody had a different idea. I suppose that was a way of all of us being able to contribute and all of us being able to get something out of it ... and it was a lot more interesting and we'd great fun!'* (Karen).

Aggarwal and Bates (2000) describe competition as a motivator for learning in pharmacy students. They argue that a competitive atmosphere with others affects learning in both positive and negative ways. Victoria described how she would text friends *'to see how far on they are and if they're around where I am, I'm like, that's ok but if they're way ahead of me, I'm like oh, oh ... but then if one of the girls is way behind me, maybe I think oh, I'm going through this too quickly'.* She described this practice of using friends' progress as a '*security blanket'* to motivate her in studying and appeared to be using this as a yardstick to measure her relative speed of learning.

Karen, Donna and James's description of studying with peers and Victoria's benchmarking by text were related as empowering and motivating experiences rather than fitting with Aggarwal and Bates'

(2000) more negative conception of competition and links back to the *'social and emotional gains'* (Topping 2005) of peer learning discussed earlier (Chapter 4.1).

Coffee featured heavily in a number of participants' discussions. As discussed in 4.2, for some coffee was a ritual they associated with studying.

Figure 24. Coffee (Lisa, Stage 4, object 2)

For Emily using it as a goal was a practice she used in motivating herself; *'I'll get this amount done and then I'll go for a coffee break. I'll do this before my next break. I won't get that coffee until I've achieved that wee bit.'*

Lisa and Ewen recognised the 'pharmacological' effect of coffee; that the caffeine kept them going during intense periods of study. '*I think it's the sort of … the being on edge thing, and I think I'll work better … under pressure so ... when deadlines are coming up you work better ... coffee … gives you that boost in the morning, that boost mid-morning and that boost at lunch-time and about six other times during the day, so I think*

it's that sort of being on edge and being ready to go sort of thing' (Ewen).

Lisa also described the social aspect of having a coffee with peers; *'it makes you feel better as well because you get a bit of a chat and you feel like you are going through something the same. It's ridiculous how much a hot drink can, like, put you through Uni, but it is. It's crazy!'*

For Lisa, coffee also represented the financial pressures associated with being a student. The local coffee shop sells take away coffee for £1 before 10.30am and Lisa brought along a cup of coffee with her to the interview. *'It's a Books and Beans £1 coffee ... it's one of the main things I've struggled with for four years by being able to balance money, being able to balance, em … staying awake, so it's the two things combined together for this one ... purely because my parents have supported me with everything that I've done and they've been great with it and … em, but it's always been the fact that because I need to work hard to get where I am, I don't have that much time for sort of a spare job.'*

Taking this issue of financial pressures and motivation further, Andrews and Wilding (2004) demonstrated a causal relationship between financial pressures on students and both their mental health and academic performance. A report in 2011 by mental health charity YoungMinds, showed that calls to its helpline about young people and exam stress had risen by 12% over a 12 month period (Higgs 2011). The organisation blamed rising tuition fees and the subsequent pressure on school pupils

to get top grades. With the current changing economic climate and significant pressures ahead for HE and student funding, these financial pressures and their subsequent impact on student performance are likely to increase over the next few years and need to be borne in mind by those supporting students in their learning practices.

Figure 25. Rugby ball (Gavin, Stage 4, object 2a)

Figure 26. Champagne bottles (Gavin, Stage 4, object 2b)

For Gavin, the picture of a rugby ball and champagne bottle not only represented social interaction but also a way that he used goals as a practice to keep him focused on learning; *'… right, I just need to get this done right, no matter how bad it is, it needs to get done, I need to pass it and then ... I can go play rugby on Wednesday and I can go out on Wednesday night and I don't need to worry about it.'*

Goals and achievement were also important to other participants.

Figure 27. Achievement folders (Jessica, Stage 2, object 3)

Figure 28. Transcript letter (Helen, Stage 4, object 3)

Jessica brought her 'achievements folder' containing all her school certificates and achievements and explained how this gave her confidence to persevere; *'these show me that I can do it'*. Helen brought a University transcript letter to represent *'what* [she has] *to get at the end of'* her studying; *'These are my copies of exam results so ... I suppose ... that I am quite goal orientated (laughs) ... from the start I would always be thinking about results and what it's … not that I want to do really well, but kind of this is the whole process ... and in the back of my mind that would be what my focus always is.'* This links back to the literature around threshold concepts and troublesome knowledge and how some students get through the difficulties and others do not. Land et al. (2005 p.59) describe a response from one of their participants where *'the next time she faced such troublesome knowledge, she asserted, she would 'hang in there' with greater confidence because she now knew she would eventually find a way of coming to understand'*. In Jessica and Helen's case their past achievements and their ability to get through

struggles gave them the confidence to approach a new difficulty. These struggles will be discussed further in Chapter 6.

Jessica also used *'Gordon the super stress man'* to represent how *'super-stressful'* the pharmacy course is and how much work she felt she needed to do but also how she *'cares so much about wanting to do well.'*

Figure 29. Gordon the super stress man (Jessica, Stage 2, object 2)

Another trait that Twenge (2000, 2006, 2009) has identified as characteristic of Generation Me is increased levels of anxiety and depression and she warns that these combined with demanding training (such as the 600 SCQF point in 5 years MPharm) means *'more and more young people are experiencing serious mental health problems while in school'* (Twenge 2009 p.403). These student learning practices are important for educators and support staff to consider when supporting students in their studies.

For Gavin, the future and being able to earn was a major motivator and he represented this with his wallet.

Figure 30. Wallet (Gavin, Stage 4, object 2)

'I just took a photo of my wallet … by the time you get to this stage anyway it's a real motivation that you're obviously wanting to earn money once you graduate and the whole point of going to university is to … especially coming to get professional degrees … is that you're going to come out, as a professional … and then you can actually start earning money' (Gavin). Dave likewise felt that one of his main motivators was '*wanting to be in a comfortable, like, financial situation for my future so, you know, you can have a family and stuff like that.'*

Langley, Jesson and Wilson (2010 p.83) identified motivation for the future with pharmacy students and observed motivational differences between male and female students with males more '*interested in opportunities for independence, through ownership* [of a pharmacy] *or self-employment'*. Although Gavin and Dave did not discuss the details of their hopes for their occupational futures, financial independence featured in their discussions about motivation for learning.

Aggarwal and Bates (2000) identified goals as an extrinsic motivator towards learning for pharmacy students i.e. the need to meet defined goals as set by themselves or others. They classified motivation for financial rewards, such as Gavin and Dave's as 'promotion' with financial and employment prospects acting as facilitators to learning. Thinking about practices and also Plumb's (2008) ideas that students are part of a complex meshwork of learning and the negotiations they make along the way, are perhaps a more helpful way of considering this than influences that are 'external' to the student.

Interestingly almost all participants in this study did not express qualifying as a professional as a goal but instead were focussed on passing exams (another motivator identified by Aggarwal and Bates (2000)) and on finishing their degree.

Gordon, who had had a number of years career experience as a scientist before commencing studies in pharmacy, brought his Royal Society of Chemistry membership card to represent achievement as well as identity and belonging.

Figure 31. RSC membership card (Gordon, Stage 1, object 2)

'It's one of those things that it took me a long time to get there and it's something that I'm proud of doing … It isn't just something that you do just to put on a CV, it's the fact that I am a chemist and I've always wanted to be a chemist' (Gordon).

Belonging to a professional body or organisation did not feature in any of the other participants' interviews. Professional identity was only explicitly expressed in Gordon's case and this did not relate to professional identity as a pharmacist but to his previous career as a chemist. Professional identity and the 'being' aspects of participants' struggles will be explored further in Chapter 6.

Participants did not relate feeling part of a professional community as a motivator. This may link to students not being members of a professional body at the time of the study and was something that the newly reformed professional body for pharmacy, the Royal Pharmaceutical Society (RPS) addressed as one of its first special resolution votes (News Team 2010b). Members voted overwhelmingly in favour of creating a category of student membership with the hope that students would engage with the professional body during their studies with the potential to help with the professional socialisation process (Harding and Taylor 2002). Since RPS funding is based on membership numbers, this may also be seen as a good marketing ploy! This aspect of pharmacy students' motivation may be interesting to explore further in the future, once students are routinely joining the professional body.

Kang, Brian and Ricca (2010) describe Ausabel's assertion that *'student motivation plays an important role, in that students who have no interest in making sense of their classroom experiences will not construct anything meaningful'* (Ausabel 1968 cited in Kang 2010 p.127). Motivation as an influence on learning was a theme which was expressed strongly by participants in this study with a wide array of different artefacts that represented motivation for them.

4.5 Ways of learning

A number of participants brought along objects that represented how they learn.

Figure 32. Cosmos book (Dave, Stage 3, object 2)

Dave brought along a book on the Cosmos to represent how if he '*find*[s] *something like, really interesting, then* [he] *find*[s] *that a lot easier to learn'.* This idea of relevance, interest and enthusiasm for a particular subject will be explored further in Chapter 6 around aspects that participants struggled with.

Georgia spoke about how body language helps her to learn, linking back to the visual learning practices discussed in 4.1.

Figure 33. Body language, hands (Georgia, Stage 4, object 3a)

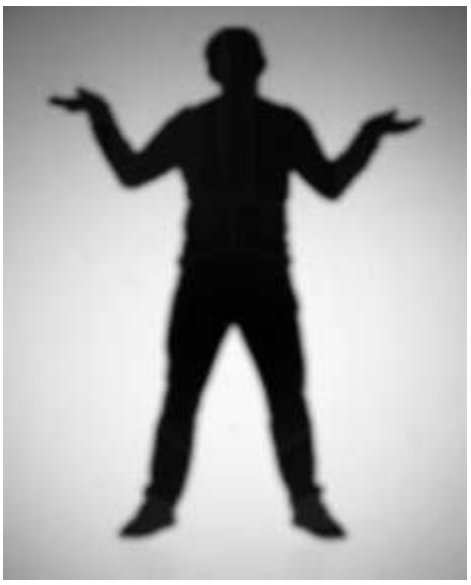


Figure 34. Body language, body (Georgia, Stage 4, object 3a)

'When the teacher is teaching, the body language has a lot of effect on me, you know ... how they demonstrate things and sometimes … some people are very expressive and they use ... their body language to demonstrate ... what they are trying to say and it has ... a really has a big influence on me. I would always remember that because the teacher did for example this act, you know. It kind of goes into my brain, you know and stays there' (Georgia). She also discussed use of coloured pens (see 4.1) and related this and her awareness of body language to her visual learning practices.

For Helen and James, both graduate entrants to pharmacy, online resources and the practices surrounding these had a significant impact on

the way that they learned in the MPharm course and Helen represented this with her USB stick.

Figure 35. USB stick (Helen, Stage 4, object 2)

'I brought this along to represent, I suppose, all kind of e-learning and ... kind of everything is online these days … I find that a big change because I … did a degree before ... this is all totally new and … I find it really, really useful and kinda much … much better being able to stay up to date with things'. Throughout the MPharm curriculum, but in the final year in particular, there is quite a lot of learning material and support delivered online. Students work both individually and in groups on projects and case studies using a problem-based learning approach and are supported through discussion forums by academic staff and e-tutors (pharmacy practitioners who are contracted to facilitate discussion and learning online).

Linking back to the social interaction practices described earlier, Helen found the online forums really helpful to her allowing her to post and move on from issues she was struggling with; *'it's really handy because if you're at home when you're having a problem, you can just put something up on the forum … hopefully somebody will get back to you ...*

I could kind of get to a point with something and then maybe post my, my ... questions or what I think and then totally leave it until the next day or two days later when I have more information. Sometimes I find that other than getting really stressed out with something and trying to push through it like you know … It's good to do that.'

James brought along his portable hard-drive to represent how *'information technology has helped me through the pharmacy course'* and how access to electronic resources differed significantly to his previous degree. He saw the volume and accessibility of information and resources as something that, for him *'made the learning process way easier'* and was something he felt he would also use in the future. When he started 'filtering' and analysing the information he used pen and paper as he found that *'it takes a lot longer to write a sentence than to think it'* and so this helped his *'reasoning process'.*

Many e-learning approaches to curriculum design are heavily influenced by constructivist underpinning (Felix 2005) allowing *'learners to construct their own knowledge through resource-rich, student-centered, and interactive learning'* (Zhang et al. 2004 p.78) and this appears to be James and Helen's experience of online learning.

Kat brought along two interesting pictures which represented how she learned.

Figure 36. Bath (Kat, Stage 4, object 3)

The first of these was a bath and for her this represented the 'eureka moment', the point at which '*you get a sudden and brilliant connection between things and suddenly* [snaps fingers] *everything falls into place'*. She described this as the *'gold standard … the best thing that happens when you are learning'* and that *'it's brilliant when it happens'*. Kat described that when she has been studying pharmacy it has often happened *'when I'm sitting being taught and … someone else is making connections that I could not have made for myself at that point … and they make them and its amazing and you think, wow I get that now, that's brilliant!'* This links to the idea of threshold concepts (Meyer and Land 2003) with crossing the threshold likened to moving through a door into 'enlightenment'.

For Kat one interesting aspect of this was that she could not remember the specific instances of when this had happened, simply remembering that it had; *'when you look back … it's really hard to think of them because once they're there they're as smooth as anything else so you*

can't pick them out individually because they're just part of your understanding ... erm ... they don't seem amazing after they've happened'. Land et al. (2005 p.58) argue that these thresholds are often characterised as highly significant moments when they occur but that it is often difficult to *'gaze backwards across thresholds and understand the conceptual difficulty'* being experienced and this appears to echo with Kat's experience. Threshold concepts will be returned to in Chapter 6 in considering participants' struggles.

Returning to the title of this chapter, the second picture Kat brought along was of a spider's web which she felt represented how she learned.

Figure 37. Spider's web (Kat, Stage 4, object 2)

'When I think of how I learn, I think of a spider's web and the reason I say that is because I think these, the out, the vertical lines of the spider's web are, ... how you build your knowledge and the connecting ones are your understanding between the knowledge' (Kat).

For Kat, learning was about making connections and understanding and she had insight into how that occurred in her mind; *'When I'm learning something that's purely in my head, I think the connections you make between the information are the same as when you are actually doing something physically in front of you, you're making the same jumps in understanding, it doesn't necessarily need to be in front of your eyes to do that, to connect things together, so I think that's what happens inside my head.'* This contrasts to the *'not a very good kind of* [factual] *learning'* she described in relation to the BNF (Chapter 4.3) and links to Waterfield's (2010) knowledge practices which Kat appears to find more satisfying.

4.6 Reflections on choosing the artefact

Participants were asked about choosing the artefacts to bring along to the interview and many reflected that they found the process difficult initially but ultimately useful. Some struggled to think of what to bring; *'I was actually racking my brains ... erm ... just 'cos I didn't really know exactly what you meant by something that representing my learning'* (Debra). For others such as Kat, the problem was what to choose from the ideas she had; *'I had a lot of ideas actually and I kind of just went for the first couple of things I thought of rather than over think it too much'* (Kat). Those who did not have any problem identifying artefacts, like Kat, tended to convey more insight throughout discussions on how they learned than those who had difficulty identifying something to bring.

Helen articulated insight that she was assessment focussed but that realisation had developed further during the course of the interview; *'I think I realised that I am ... and just even speaking to you now ... that I am really focussed on, kind of em, the exams and, kind of, that's my goal.'*

A number of participants asked others what to bring for example Lisa and Jessica both asked friends or boyfriends who immediately made observations on what would be relevant. Gavin wasn't sure of what to bring so asked his flatmate; *'… the first thing that my flatmate said when I said to him – he said 'obviously your radio' because when I'm studying I have the radio on the whole time. It's absolutely the first thing that he thought of'.* When this was highlighted to Gavin he agreed but explained; *'It's kind of a thing that you would never think about because it's just what you do'.* Like Gavin, discussions with a number of the participants focussed on aspects of their learning practices that they had not previously considered. Victoria explains; *'I was saying to* [friend] *what will I bring and she was like 'bring your phone, bring that green pen that you always have stuck to you' … I never thought … subconsciously I never realised that I always have them, but thinking back, they're always there, like.'* Once these artefacts and the learning practices surrounding them were raised to their consciousness they acknowledged the importance of them but many were unaware of the significance before being invited to the interview.

Lisa explained that her artefacts were *'quite boring things that were the most important to* [her] *in learning'* linking back to Law's (2009) collateral realities and the un-noticed artefacts that form part of the meshwork surrounding students' learning. Lisa reflected that on deeper consideration, she realised that many of her 'boring' artefacts had deeper meaning and significance for her, for example her coffee also representing the financial issues she had experienced.

In terms of whether choosing the artefact and going through the interview, Diane reflected on how it increased her awareness of her own learning process; *'It's made me more aware of how I learn, you know and which … and where I can make improvements and things like that'* (Diane). Donna reflected by email later that she and Helen felt the interview was *'actually quite therapeutic'* and had joked about booking in for another one the following week!

Emily sent some reflections by email after the interview; *'I have never had the opportunity to reflect on how I learn and the different ways I do so. The interview and the selection of the objects enabled me to identify ways I learn, for example by making lists for everything. I have never consciously thought about this aspect of my learning before. Before the interview I was very apprehensive, however I found the objects allowed me to open up and identify these different learning techniques which, in turn, allowed me to speak much more freely than I thought I would.'*

4.7 Conclusion

Using artefacts in the research process has afforded an in-depth view of this group of pharmacy students' learning practices. The emergent themes allowed insight into specific study practices adopted by participants, their 'rituals' associated with learning, pharmacy's knowledge, motivation for learning and ways of learning.

The artefacts brought along by participants and the meanings they ascribed to them, exemplify the complex meshwork surrounding student learning and their learning practices. In particular the unnoticed practices or collateral realities (Law 2009) appeared to be significant in the participants' experience as pharmacy students. Motivation and social interaction (reflecting learning as participation rather than learning as acquisition) was an important aspect of what represented learning for participants.

Returning to Ingold's (2011) concepts, primacy of movement is emphasised, the idea of movement along a way of life indeed as quoted at the start of Chapter 2 he argues that '*to learn is to improvise a movement along a way of life'* (Ingold 2010). The participants' journey towards becoming a pharmacist appears to encompass this idea with different kinds of movement being intrinsic to participants' descriptions of their learning experiences. Participants' learning is constructed through the complex weave of the meshwork of their natural, social and cultural worlds (Ingold 2011) and this study has highlighted and explored the interconnections and the interweaving of lines. Returning to the

metaphors of learning, the notion of 'learning as a journey', which echoes with the movement along a way of life, is one which Edwards (Edwards 2006) cites Harrison, Reeve and Clarke's idea (2002 in Edwards 2006 p.8) that this is a:

> *root metaphor around which a range of other metaphors coalesce to produce individualised understanding of learning and the roles of teachers and learners.*

Participants indicated that the process of choosing and reflecting on the artefacts was useful in allowing them insight into their learning practices (or aspects of their meshwork) that they may not have previously been aware of.

Twenge (2009 p.404) argues that the first step in educators teaching the current generation of students better is to '*understand it's perspectives and realise that they are reflections of contemporary culture'*. This study has attempted to achieve this understanding by exploring participants' learning practices using their chosen artefacts. Insights gained can be used to inform curriculum development in the MPharm at RGU and this will be explored in more depth in Chapter 7.

5. 'Through the window' on assessment practices

> *Symbolism is the perfect way to approach this mystery: one gradually conjures up an object so as to demonstrate a state of mind, or, conversely one chooses an object which, when gradually deciphered, reveals a state of mind.* Stéphane Mallarmé (1891 in Huret 1891).

In this chapter the themes relating to participants' practices around assessment and feedback, and how they perceived these as impacting on their learning, will be explored. Some themes emerged from the objects participants brought, in other cases these relate to particular questions asked around assessment during the interview. Themes relating to assessment practices which are discussed in this chapter are: conceptions of assessment, the impact of the nature of assessment on learning practices, feedback, strategies used in assessment practices, the affective dimension of assessment and assessment constrains free-thinking.

Whilst conducting the interviews I realised that, in keeping with using a visual and creative method of data collection, I wanted to analyse the data in a similarly creative way and in this chapter I have attempted to juxtapose the ordered, structured and 'scientific' concept of assessment with fine art by comparing the experiences recounted by participants with specific paintings by the early 20th century artist, Pierre Bonnard. During a visit to the Tate Modern Gallery in London, I was inspired by a painting by Bonnard called *The Bowl of Milk*.

Figure 38. Bowl of Milk (Pierre Bonnard, 1919)

The commentator's description of Bonnard's way of working (which will be explained in more depth in 5.2 below) prompted me to explore his work in more depth and led to the decision to use art in the analysis of some of my data.

5.1 Pharmacy – art or science?

Returning to the diversity of knowledge held by the pharmacy profession discussed in chapter 1.2.1, it has been debated whether pharmacy is a science or an art or both. Many argue that it is both; indeed the University of Saskatchewan College of Pharmacy and Nutrition define pharmacy as *'the art and science of preparing and dispensing medications, and the provision of drug and health information to the*

public' (University of Saskatchewan College of Pharmacy and Nutrition 2008). In 2003, Clark, Gruber and Sey published a paper 'Art or Science' in *The Consultant Pharmacist.* Their focus was on the process of pharmaceutical care, referred to in Chapter 1.2.3 and did not appear to explicitly link to their title; however their underpinning ideas were consistent with other literature that pharmacy is a unique integration of art and science.

The only explicit link between pharmacy education and creative art in the literature was a project conducted at University of Sussex called 'Artemacy - The fusion of creative art and pharmacy education' (MacAdam 2010). The project aimed to *'use a range of art to enable pharmacy students to integrate their creative and cognitive abilities'* and to evaluate whether *'the use of creativity as part of the curriculum may reduce anxiety and increase confidence in the students'* (MacAdam 2010 p.1). This project appeared to have direct relevance to the ideas explored in this chapter and was followed up personally with the research lead. Unfortunately the outcome of the study has never been published and is unavailable for comparison.

5.2 Post-impressionist art

On researching Bonnard's work further, it became apparent that he is considered to be one of the artists in the post-impressionist period of the late 19th and early 20th century. In this period artists were not only rebelling against the structure and *'formulae of 19th century academicism and the empirical limitations of naturalism'* (Watkins 1998 p. 11) as the

Impressionists had been but were also *'breaking free of* [Impressionism's] *limitations and orthodoxies'* (Thomson 1998 p.8). The artists *'worked over the possibilities opened up by Impressionism'* (Thomson 1998 p.8) moving forward artistic style and techniques. This was happening alongside development in literature *'evolving from naturalism to symbolism'* (Thomson 1998 p.13) and the changing and increasingly emancipated political and cultural landscape of the early 20th century. This movement ultimately lead to the development of Modern Art.

Bonnard's early influence was as part of the Nabi group of painters who in turn were influenced by Symbolist poetry, like the work of Mallarmé quoted at the start of this chapter (Whitfield 1998 p.12). He believed that use of colour, line and composition evoked feeling and thought which in turn helped to *'reveal the mysterious nature of human experience'* (Watkins 1998 p. 11). The open-ended nature of this genre of art appealed to me (Watkins 1998 p.11) and I felt resonated well with my interpretivist stance in research; I felt like I was rebelling against the 'empirical limitations' of positivism (as described in Chapter 3.1).

It was the chance encounter with Bonnard's work during a visit to the Tate Modern that started consideration of using art in the analysis of data for this thesis. As discussed before, I had concerns about using analysis methods that would inhibit the creative method I had used in data collection. I was struck by the curator's commentary on Bonnard's style of painting; he did not paint in front of his subject or '*before the motif*'

(Watkins 1998 p.47) but instead allowed his reflections on, and his memory of, a scene to influence how he portrayed it. He painted entirely from memory; he wanted his works to reflect his subjective response to the subject (Anon 2009) and attempted to translate the *'first possession of a moment'* (Nickson 2009 p.1) in his work. His art is *'based on deeply felt experiences, filtered through memory and expressed by relationships between colour, light and composition'* (Watkins 1998 p.11). Bonnard's way of working involved painting several contrasting subjects on a single stretch of canvas attached to his studio wall, rather than focussing on one subject at a time (Watkins 1998 p.47). This unwillingness to be constrained by a frame is reflected in the composition of many of his paintings. Bonnard's way of working contrasts with Ingold's (2011) discussion of painting in Chapter 2.

In discussing dwelling, Ingold (2011) reflects on Merleau-Ponty's words on the painter's relation to the world. He writes that this relation is not a *'simple 'physical-optical' one, that is he does not gaze upon a world that is finite and complete, and proceed to fashion a representation of it. Rather the relation is one of 'continued birth' … as though at every moment the painter opened his eyes to the world for the first time'* (Merleau-Ponty 1964 cited in Ingold 2011 p.69). This discussion embodies Bonnard's style of painting and forms a vivid connection between the concept of dwelling explored in the previous chapter and the analysis carried out in this one. Again linking to the concepts in Chapter 4, Ingold also cites Elkins, an art historian who draws on the metaphor of a spider's web in creative art; *'I am not the spider who weaves the web,*

and I am not even the fly caught in the web; I am the web itself, streaming off in all directions with no center and no self that I can call my own' (Elkins 1996 cited in Ingold 2011 p.247).

I believed that it would be interesting to apply the idea of Bonnard's representations as being filtered through his memory to my participants' reflections on their learning experiences. The conception that what they represented and articulated was filtered through their memory was one that I wanted to explore, hence the decision to use some of Bonnard's paintings to analyse the data relating to participants assessment practices. In addition, student assessment usually evokes a strong emotional response and similarly art can stimulate the affective dimension of our being. Participants' description of assessment and their reflections on it was given in quite dramatic language at times evoking the affective dimension. Art can do the same, evoking emotion via use of colour, form and composition, drawing people in both cognitively and emotionally. There is a language of neutrality associated with how we write about and speak about assessment in academia and by attending to the texturing that art brings and the affective dimension, we may be able to see how assessment practices link to becoming a pharmacist.

Following on from the use of metaphor in Chapter 2, there are also parallels between the way in which Bonnard constructs his paintings and the way that metaphor is used in language. Bonnard draws the viewer in and encourages them to view the world in a different way by appealing to the affective using colour, form and composition. This connects with the

way that metaphor textures language and the patterns of speech and sense-making that it allows. As a subject, one is 'hailed' by the picture in Bonnard's work and metaphor in language addresses us in a similar sort of way.

In carrying out the analysis I chose six of Bonnard's works and compared them to specific themes relating to participants' assessment practices. In doing so I considered Bonnard's composition, subject, use of colour, technique and, where documented, the ideas behind the painting. Alongside this I used commentators' analysis of the piece along with my own and others' impressions of the paintings and the ideas that each stimulated. In most cases I was unable to view the original work and used the internet and art textbooks but wherever possible took the opportunity to view the original painting.

The remainder of this chapter will explore the themes of: conceptions of assessment, the impact of the nature of assessment on learning practices, feedback, strategies used in assessment practices, the affective dimension of assessment and assessment constrains free-thinking in relation to Bonnard's paintings.

5.3 Coffee – a routine event

The first painting I chose was *Coffee (1915)* and this has been used to explore the theme *'conceptions of assessment'*.

Figure 39. Coffee (Pierre Bonnard, 1915)

This painting was chosen firstly because many participants brought coffee as one of their artefacts but also because of the composition that Bonnard has used in this work. Bonnard succeeds in making the viewer feel part of a normal or routine event but yet, at the same time, separate to it which echoes with my experiences as an observer on participants' assessment practices. Assessments in HE are a normal and routine event and by participants sharing their reflections with me, I felt part of it, but at the same time separate to their experiences.

This idea of being part of but yet separate to something also echoes with the finding that participants appear to conceive assessments as end of semester examinations; a routine event but separate to their learning rather than part of it. As described in Chapter 4.2, Peter used different study strategies before end of semester exams compared to coursework assessments and only used his desk when studying for these. Emily described end of semester exams as her main goal while learning and

pictured herself sitting the exam; *'it's really hard to picture yourself sitting in that exam when you have no idea of what the module or … how everything fits in together until half way through then that's when I finally see it'.*

In the MPharm curriculum at the time these interviews took place, traditional end of semester examinations were used in years one to three but were also balanced with other types of assessment which in many cases contributed as much to the final module grade as the examination. When questioned about what they understood by the term assessment, participants appeared to conceive of assessment as the end of semester exams, viewing these as more important to them in terms of performance than those that take place throughout semester. For example, when asked what his understanding was of assessment in the curriculum, Dave said *'assessments, as in like the actual exam?'*. The MPharm curriculum is designed as a progression, with assessments intended to move students along the journey however participants did not perceive assessments in that way. They appeared to conceive them as events in and of themselves, as intense moments in their journey, creating a break (or punctuation) in their learning. Participants gave the impression of assessments as 'hurdles to cross' rather than as an integral part of their learning process. Returning to Ingold's (2011) ideas, he describes what Heidegger has to say about the way that human beings and non-human animals relate to the world around them and discusses how:

> *to the skilled practitioner absorbed in an activity, the things he uses are available and ready to hand. So long as activity flows*

> *smoothly, their objectiveness melts into the flow. As the practitioner's awareness becomes one with the activity, he or she does not attend to the objects as such* (Ingold 2011 p.81).

If we consider assessments as objects in the meshwork of students' learning, participants' experiences imply that these do not *'melt into the flow'* in the way that Ingold describes. Returning to Bonnard's coffee, he draws attention to this moment captured over a cup of coffee and portrays this ordinary event as an intense moment because of his dramatic use of colour and unusual composition, similar to how participants viewed assessments within their learning.

Crossman (2007) in a qualitative analysis of the role of relationships and emotions in student perceptions of learning and assessment describes how past experiences of assessment influences current perceptions (p.318) and this would appear to echo with participants' experiences in this study. Their emphasis on written exams in their past experience (perhaps through the assessment driven culture in secondary school education) may be leading them to over-emphasise the importance of exams. This conception of assessment as the end of semester exam also appears to have an impact on participants views on feedback which will be discuss in 5.5 below.

In Coffee, as indicated earlier, Bonnard challenges convention in the way he composes the painting by not adhering to traditional rules of perspective and by framing the picture in an unusual way. Part of one of the subjects is 'cut off' and the table and the items on the table form the main foreground rather than the people. As in Chapter 4.2 and Law's

(2009) collateral realities, Bonnard draws attention to the normally un-noticed aspects of the moment. By comparing participants' assessment practices to this painting in the same way, what is normally in the background (their conceptions of assessment) has been brought to the foreground. In the spirit of Bonnard's challenge to the convention of composition, in designing assessment for the MPharm curriculum, a similar challenge to convention is worth considering. A growing emphasis on innovative assessment methods which are being introduced to assess skills as well as knowledge (see Chapter 1.2.3) appear to challenge students to learn for understanding and to develop as professionals. An issue that appears to need to be engaged with however is students' fundamental conception of the important assessment as being the end of semester written examination.

5.4 Through the window on assessment

The Dining Room in the Country (1913) is the second painting chosen as it represented my role in looking through the window on participants' learning and assessment practices. This painting was used to explore the theme of *'the impact of the nature of assessment on learning practices'*.

Figure 40. Dining Room in the Country (Pierre Bonnard, 1913).

For a period of Bonnard's work he was preoccupied with the window as a metaphor; *'a window, like a painting, is both an opening and a barrier, a three dimensional view and two dimensional object'* (Watkins 1998 p.42). In this picture the door and the window are open and the subject is looking in from the outside; *'the open door and windows invite the spectator into the composition and at the same time flatten form in an interwoven network of abstract colour patterns across the surface'* (Watkins 1998 p.42). I felt that participants had invited me in to their reflections on learning and assessment but at the same time I remained looking in from the outside. This is not to say that these assessment practices formed independent reality (an *'out-thereness'* to use Law's (2004 p.24) terminology) but that, similar to the discussions around Coffee in 5.3, my role as tutor and researcher kept me part of, but yet separate from these practices. I felt slightly distant from the practices I

was trying to make sense of and was aware of a gap, however my own practices around using artefacts and engaging with students in data generation happened within that gap, analogous with the effect that Bonnard achieves of evoking a *'strong feeling that we are 'in' the space of the represented image'* (Nickson 2009 p.2). This allowed me to construct a sense of the practices being explored and enabled me to construe participants' practices in a novel way.

In 'looking through the window' on participants' assessment practices it emerged that the nature of assessments affected their learning.

Debra discussed multiple choice questions (MCQs) and how she felt that these did not motivate her to understand a subject; '*I find when you are studying for an MCQ, it's just like trying to memorise as much as you possibly can … I mightn't always understand what I'm learning and I'm just learning to reach that goal of passing that MCQ. So you're just … surface learning, you're not learning to understand'.*

Others discussed using this type of rote learning prior to exams, perceiving this as *'not a very good kind of learning'* (Kat) and as a poor strategy especially when this included 'spotting' (strategically avoiding studying subjects in the hope they will not appear in the exam). Gavin described an example of this practice; *'so on countless occasions we've sat and gone … right there's eight parts to this course, there's five questions, that lecture had those two questions last year, you work it out and you can get down to four or five topics out of say eight or nine and*

you can discard … a few topics.' Gavin acknowledged the practice occurred but expressed concern about how it would impact on his future practice as a pharmacist; *'… I remember last year … it was majorly hinted at that oncology wouldn't be an essay question, and I know a lot of people just didn't learn oncology because it was such a huge chunk ... if you knew it wasn't an essay question you could sacrifice those five marks and give yourself so much time to learn other stuff, which everyone knows, in the back of their head, is a bad because you can't be a pharmacist who doesn't know a thing about cancer … but you need to pass the exam.'* Hargreaves (1997 p.408) argues that *'conventional assessment practices do not encourage lifelong learning, critical thinking or a deep understanding of the subject matter'*. Barnett (2007 p.32) similarly asserts that if students *'sense that the forms of assessment are calling for factual knowledge or for descriptive accounts of situations, the students will mirror these perceptions in their knowing accomplishments'.* These arguments appear to be supported by Gavin's experience of learning about oncology.

Entwistle and Entwistle (1991 p.205) describe a distinction between learning as *'reproduction of information presented'* or as *'transformation of that information in the process of coming to understand it for oneself'* and the assessment practices described by Gavin, Kat and Debra appear to fit with their categorisation as the reproduction of information. Participants appeared to be adopting this approach without feeling comfortable with it and reflected on the potential negative impact on their professional knowledge in the future.

Marton and Säljö's (1976) theory of 'deep' and 'surface' approaches to learning, as discussed in Chapter 2, is an influential pedagogical theory in understanding student learning, however the literature reviewed in Chapter 2 has shown that learning is a far more complex process than represented simply by these two approaches. The 'strategic approach' suggested by Entwistle and others (Entwistle and Tait 1990, Entwistle and Peterson 2004, Hounsell and Hounsell 2007), where students aim to achieve good grades by using organised study methods and are alert to assessment requirements, appears to link with the practices of Gavin and others. Boud (1995 cited in Hargreaves 1997) refers to a number of connections between assessment and learning which link directly with the practices described by Gavin and others. Not only does he argue that the nature of the assessment task influence the learning but also that students tend to focus on the topics being assessed at the expense of those which are not. It can be argued that overcrowded curricula with a high number of assessments will shape student learning in a negative way forcing students into learning to pass assessments as opposed to learning for understanding (Hargreaves 1997). Gibbs (1992 p.9) cites course characteristics which he argues are associated with a 'surface approach' to study such as a heavy workload, high class contact hours, an excessive amount of course material, a lack of opportunity to pursue subjects in depth and a lack of choice over subjects or method of study and a threatening or anxiety provoking assessment system. As a 600 credit undergraduate Masters degree, the MPharm curriculum, when these interviews were conducted, possessed many of these characteristics. It is perhaps unsurprising therefore that participants in

this study describe the assessment practices above. Biggs and Tang (2007) explain how Elton (1987 cited in Biggs and Tang 2007 p.169) uses the term 'backwash' to describe how students learn what they think they will be tested on and how this defines the 'actual curriculum' (Ramsden 1992 cited in Biggs and Tang, 2007 p.169). Biggs and Tang go on to argue that negative backwash always occurs in an exam-dominated system. The MPharm curriculum at the time of this study had a number of points in the course where student workload and the number of assessments were considered excessive (particularly in year 3 where Gavin studied oncology) and where exams dominated. These issues have been acknowledged by the course management team and have been taken into account in curriculum re-design. At the time of writing this thesis, the management team has reviewed and reduced both the numbers of modules and the assessment load across the course to attempt to allow students time to reflect, develop and learn for understanding.

Participants also described assessment practices which align with Entwistle and Entwistle's (1991) transformative learning. Jill described how the final year assessments were about integration or *'bringing everything together'*; *'Assessments this year is just for me, is actually bringing everything together. I think that's happening in fourth year that everything that you've learned … not everything, but quite like the majority of things you've learned in first to third year has been pulled together and you're realising why these things are actually important whereas at the time, you would be like, what's the point in this, what's*

the point in learning that, it's always hard to see the relevance to pharmacy … I'm going to do the bare minimum to pass the exam … you could rote learn it whereas … the assessments this year are bringing nearly everything together, and it's kind of putting a common thread through everything'. Jill described how the learning in early years started as rote learning but how in final year, in integrating this knowledge, the learning became transformational and part of her development as a professional. Georgia also described how she looked back and saw the relevance of assessments later and how these had contributed to her development; *'first and second year … lab reports. At that time I didn't know the purpose, I just thought 'oh it's just, you know they want to give us lot of work', you know … but looking back, I realise that it was actually the beginning. They wanted to … build us, you know, through first year, second year, to teach us and how to write and how to, you know, erm … how to erm … kind of reflect back what we've done in the lab … every time when I looked back and realised 'oh yeah, yeah, that was the point'.*

The perception of relevance to the future was one which was raised by a number of participants and appeared to have an influence on both their learning practices (as discussed in Chapter 4.1 and 4.4) and on their assessment practices. Debra described how assessments that *'examine the subject as a whole'* and that she would use in the future meant that she was *'not memorising as such for those because I need to have an ultimate understanding to sit those exams so I find those much more beneficial'.* Karen likewise expressed that she took a different approach to assessments in clinical based modules which she perceived as being

important for the future (see Chapter 4.1). This perception of relevance will be explored further in Chapter 6.

Continuous assessment was discussed by a number of participants in this study. Hernandez (2012) studied the extent to which continuous assessment practices facilitate student learning and the challenges faced and asserts that there is a tension between assessment as grading students' progress and supporting students in learning i.e. the summative and formative purposes of assessment.

Georgia described how deadlines and continuous assessment allowed her to be disciplined; *'I need to have you know, deadlines you know, I need to have, you know a time that things, when things are going to be tested you know, so if erm, so for me it's very important in my learning, it makes me to it, it kind of disciplines me, it makes me to actually study and go back and try to revise.'*

Lisa described the *'healthy stress'* associated with continuous assessment. *'Continuous assessment is, I think, a really good way of learning, but also with, it just takes the pressure off the … final exam a bit more as well, because that's when people crack and that's when people are like 'oh I can't, I don't care if I've got a re-sit', you know. Because there's too much going on, but if they learned to adapt it all during the year, they might be stressed all through the year, but it might be like a healthy type of stress – a motivational type of stress.'* She appeared to find the continuous deadlines she had experienced in final

year as motivational. Another student recently described final year to me as 'continuously tough' rather than the 'party and panic' of previous years. Students in Hernandez's (2012) study also associated continuous assessment with their motivation to learn on an ongoing basis (p.499).

Conversely to the positive descriptions of Lisa and Georgia, Helen felt that the learning process was defined by continuous assessment which she did not always perceive to be a good thing. *'I like that sort of, you know, of kind of learning as you go along and working through the topics and I'd like to be able to do that kind of across the board you know with all my subjects, but then the assessments kind of mean that I'll spend more time on one topic than I would on the other ... if there's no assessment until maybe at the very end of the, of the semester, then that topic might get pushed aside until … the very end.'*

James had positive and negative views of continuous assessment and its impact on his learning. *'Erm … I guess it does, in good, I suppose good ways and bad ways, erm … the good ways; obviously ... assessment … it strengthens your knowledge in a particular subject and I guess the wider the question or the broader the question, like the more, probably, knowledge that you gain about it, and I think, like as you do more and more assessments, like, if you do an assessment and then you do an assessment after that; the assessment that you do after, I guess, like you had more experience in how to do things ... assessment is sometimes a pressure that, if you have multiple assessment at the same time it's a kind of, it puts you under that undue pressure.'*

Boud (1995 cited in Hargreaves 1997) argues that it is a commonly held assumption that assessment measures learning but does not influence it and in looking through the window on these participants' assessment practices it would appear that this assumption is not supported here. Hernandez (2012 p.490) likewise builds on the assertions in the literature to argue that *'assessment cannot be understood in isolation from learning'*.

Assessment practices in this study appeared to have a direct impact on participants' motivation for learning and the way that they perceived that they learned. Returning to 'learning as knowledge construction' (Paavola and Hakkarainen 2005), assessment appears to be an artefact that is integral to the knowledge constructed by participants and helps define the nature of that knowledge. Thinking about 'learning as dwelling' (Plumb 2008), assessment, for these participants formed points of intensity or *'knots in the meshwork'* (Ingold 2011 p.70) of their learning. This applies to examinations which featured heavily in participants' accounts, but also to continuous assessment which, as discussed earlier, is designed to move students along their professional journey, but instead appears to present these participants with hurdles.

Hernandez (2012) goes on to argue that her findings show that the value of continuous assessment and the impact on students' learning depends heavily on the feedback they receive throughout the process. Students in her study appeared to take limited action on the basis of feedback and she argues that *'feedback in the support of student learning is no longer*

effective in addressing the assessment needs of the undergraduate students' in her particular discipline (p.499). The following section discusses feedback in relation to participants' learning in this study.

5.5 Nude in a mirror – reflection and feedback

The third painting chosen was *Nude in a Mirror* (1931). Bonnard used mirrors in many of his paintings and this picture has been linked to the theme of *feedback* because of the obvious link between a mirror, the reflection and therefore the feedback that that reflection gives.

Figure 41. Nude in a Mirror (Pierre Bonnard, 1931)

Participants expressed a number of views on feedback on assessment and on how and whether it impacts on their learning. The amount of feedback received (not enough) was commonly commented on as were

the participants' feelings when receiving feedback, echoing the NSS scores discussed in Chapter 1. Crisp (2007) argues that recent research has emphasised that rather than the feedback itself, it is how students make sense of this and whether they actively engage with the feedback, which is important. Some participants in this study saw feedback as having a 'benchmarking' purpose and others spoke about how they used it to improve future work.

Many of the participants started by saying they never get feedback; *'I couldn't understand where I had gone wrong in the actual written paper and you never find out 'cos noone ever gives you feedback'* (Debra). When probed further it became clear they were talking about summative written examinations; *'say the final exams before the summer you don't really get any feedback on them because you just get your certificate through, you've passed, and then you start next year, so you get your percentage, but that's it, you obviously don't know where you fell down'* (Gavin). Gavin also explained he had received feedback when he had failed an exam; *'obviously the feedback on the subjects that I failed first time round was massively important because you know where you fell down'*. Most who started by saying they did not get feedback then went on to comment on receiving feedback on other types of assignments; *'when you pass the OSCEs and stuff that you do during the term you get feedback on them'* (Gavin). Price *et al.* (2010 p.288) argue that *'students are dissatisfied and staff frustrated about the way the* [feedback] *process is working'* and this appears to be echoed by participants in this study.

Poulos and Mahoney (2008) reflect on students' ability to recognise feedback however this was not explored with participants in this study.

Linking back to participants' conceptions of assessment (Chapter 5.3) as consisting of the summative written examination, it is perhaps unsurprising that participant's in this study (and in other unpublished research conducted at RGU) perceive that they 'never' receive feedback. These findings may also partially explain the NSS scores discussed in Chapter 1. Hanna, Hall and Hennessey published research in 2012 conducted in the School of Pharmacy, Queen's University, Belfast to determine the reasons for their low NSS scores on feedback. Their findings show general dissatisfaction with feedback especially with examination feedback and they have since implemented a *'mandatory requirement'* (p.12) for more detailed examination feedback across all modules. Interestingly their 2012 NSS score for the question *'feedback on my work has helped me clarify things I did not understand'* was 93% (compared to the RGU score of 66%) (Higher Education Funding Council 2013). For comparison, in 2012 both institutions were ranked first equal of all pharmacy courses in the UK for overall student satisfaction (99%). Hanna, Hall and Hennessey reflect on the difficulties in establishing the correct level of detail in examination feedback using Shute's (2008 cited in Hanna, Hall and Hennessey 2012 p.12) argument that '*too much information could be counter-productive'*. The way in which they achieved this level of feedback for large numbers of students and the impact on staff workload will be interesting to consider and contact will be made with the authors to explore this further.

Participants in this study expressed feelings in response to feedback; on receiving a low mark, Kat felt she wanted to do better. Helen and Debra felt, although disappointing, it was motivation to improve; *'its kinda really disheartening when you get a low mark and you think you've done really well ... erm … so definitely it makes you work harder the next time ... because you ultimately wanna achieve that higher grade'* (Debra). On receiving a high mark, Lisa felt proud. The emotional aspects of assessment and feedback are discussed in more depth in 5.7 below.

In terms of how participants used feedback, some indicated they used it as a way of benchmarking themselves. Gordon felt it was *'nice to know where you are at'* and Kat tended to compare herself with her peers; *'You measure yourself against your friends, of course you do'* (Kat). Debra, Helen and Karen explained that they would use formative feedback in their next assignment; *'if it's a formative … a formative exam you get feedback, you know. Then for the summative I'll look at it quite a lot and I'll see what I need to do, need to improve on'* (Karen). Lisa felt that she concentrated on 'could do better' comments; *I don't sit down and analyse it completely just because I know myself just how much work I put in or like how well I thought I knew it … I concentrate on, like if they've said 'could have done something better' or if there's something that's been ticked and you're only at like a six compared to like the seven to ten box … then look like 'what could I have done … to make that better this time?'* (Lisa). Karen explained that she only really looked at feedback if she did not do well in an assignment and Jill felt that by time she had reached fourth year she was set in ways and feedback was less useful to her; *'I*

think in fourth year you've already got your own style of answering exam questions, so if it's like feedback on whether you're writing an essay or something, I think it would be hard for me to kind of change the way' (Jill). In Hernandez's (2012) study, 21% of students took no action as a result of feedback, 63% intended to use the feedback to inform future work and 16% provided evidence that they had acted on recommendations. Brockbank and McGill (1998) argue that the impact of feedback may be limited if it is vague and non-specific however participants in this study made no comment on the nature of their feedback. Hernandez also argues that the practices of feedback that include a grade were regarded as having less impact on students' learning. In this study, other than Lisa's previous comment, participants did not refer to the impact of feedback with or without grades, possibly as most formal feedback in the MPharm course at the time of the study was associated with a grade.

Hernandez (2012) argues for a *'learning-oriented approach'* to assessment which seeks to encourage and support students learning. She cites Carless' (2007) argument that in this approach:

> *students' learning is supported by setting appropriate tasks to assess students' learning, by focusing on the process of learning and on providing feedback that is effective, and by developing students' autonomy and responsibility for monitoring and managing their own learning (Carless 2007 in Harnadez 2012 p.491).*

Hernandez goes on to argue that feedback is a critical element in this approach and that:

> *a learning-oriented approach to assessment requires a radical change in the way feedback is perceived with greater emphasis given to the role of the students in the feedback process rather*

> *than to the quantity and quality of feedback, as has traditionally been the case. This approach would require that a ''feed-forward'' component is included, making it clear to students what they have to do with the feedback received (Hernandez 2012 p.500).*

The findings from this study would also indicate that a change in the way that feedback is perceived is required in pharmacy education at RGU. In the ethos of 'learning as knowledge creation' and 'learning as dwelling' discussed earlier, a more collaborative approach involving and engaging students better in the process would be useful to consider. Price *et al.* (2010 p.285) argue that the *'relationship between student and assessor is at the heart of a successful feedback process'* and Poulos and Mahoney (2008) identified that the credibility of feedback was related to the students' perceptions of the staff providing it. A focus on the '*relational dimension of feedback'* (Price *et al.* 2010 p.288) has the potential to lead to more effective engagement of students with feedback.

In *Nude in the Mirror*, Bonnard has created an interesting illusion with the reflection in the mirror seen by the viewer being different to the one seen by the subject. In considering practices and sense-making, Haraway (2004) discusses the metaphor of optical diffraction and how this differs to reflection:

> *Diffraction does not produce "the same" displaced, as reflection and refraction do. Diffraction is a mapping of interference, not of replication, reflection, or reproduction. A diffraction pattern does not map where differences appear, but rather maps where the effects of difference appear'* (Haraway 2004 p.70).

If we use Haraway's definition of diffraction to consider feedback in pharmacy education, we can reconceptualise feedback as diffraction rather than reflection and reconsider the way that we construct feedback. Crisp (2007 p.578) reflects negatively on '*unilateral pronouncements by*

assessors rather than dialogue with students' and in common with this, perhaps by creating Harraway's *'mapping of interference'* in the way that we construct feedback to students allowing disruption of ideas to take place, academics could open up a conversation to support students in knowledge creation rather than making a judgment on successful achievement of propositional knowledge. This will be discussed further in Chapter 7.

5.6 Ways of working – strategies in assessment practice

The fourth painting chosen was *The French Window* (1932) to represent the *strategies used by participants in their assessment practices*, many of which relate to the study practices discussed in Chapter 4.1.

Figure 42. The French Window (Pierre Bonnard, 1932)

In *The French Window*, Bonnard uses a number of artistic strategies to create the effect he is aiming for (Nickson 2009); the mirror in the

background has the artist himself reflected in it, the use of pencil marks etched into the paint around the hands gives vitality and he uses charcoal marks to define the head's tilt. Nickson (2009 p.3) describes how The French Window helps us to understand Bonnard's 'quest':

> *We see Bonnard experiencing for the first time his sensation, conceiving the first idea of the painting as image whilst looking at his model, Marthe. She is opposite him, the back of her head towards us, her face being viewed by the artist, who is probably drawing her at that moment on a small piece of paper, all of this takes place in the mirror, whilst we the viewers also see Marthe in front of the mirror as Bonnard would have seen her in front of him, intensely absorbed in a specific act of mixing or stirring a bowl tilted in front of her.*

Bonnard's quest is to capture his *'first possession of a moment, a moment both poignant to him as being a potential painting, and a personal incident or experience'* (Nickson 2009 p.1). For participants in this study, their 'learning quest' (Sobral 2004) was enacted in a number of strategies described within their assessment practices.

As discussed in Chapter 4.1, Diane used published assessment criteria to direct her learning. In his review of the impact of assessment on student learning, Rust (2002) raises the issue of ensuring active engagement with assessment criteria, challenging the assumption that giving explicit criteria automatically results in better performance (p.151). In Diane's case, there appears to be active engagement with published criteria as a strategy in her quest for success. Other participants did not articulate this and other unpublished research conducted with RGU pharmacy students indicates that active engagement with published criteria is not a widespread practice. This would be useful to explore in more depth in further research.

Others (Georgia and Donna) described the strategy of visualising their notes during exams; *'yeah,* [in an exam] *I always picture things so much, and … if for example if there was a diagram even in what I've been studying it really helps me, you know, to remember the actual, you know erm, the context'* (Georgia)*.* This links back to the visual study practices discussed in Chapter 4.1.

Dave, as a mature student, felt that he had well established study practices which involved a number of strategies such as the 'ritual' of locking himself away before exams and in some cases a 'load and dump' strategy for subjects he perceived as less relevant; *'I do a lot of loading and dumping, which is really shocking though, which is why I try and avoid that with the subjects that … I find are … going to be more functional to me as a pharmacist after University … I understand why I'm doing it and I see the function in terms of getting me through the course and getting a really good broader understanding of everything that's going on, but I don't see it as being really useful towards me, like post-university, so for that reason I do load and dump quite a lot of that information which is probably not that ideal but ...'.* This 'load and dump' strategy reflected perceived relevance for Dave and this will be explored further in Chapter 6.

Donna found that repetitive practice alleviated her nerves before exams and Jessica likewise found that being prepared helped with stress; *'I'm one of the few that has to be overly prepared, I don't like going into something blind'*. Jessica described a situation where she went away on

holiday just before an exam; *'having that distraction was a little bit frustrating going into the exam, because I did fail it'* and she perceived that this loss of focus and deviation from her usual practice caused her to fail.

Peer support in preparing for assessment was important for a number of participants; as discussed in Chapter 4.1, Karen discussed working with her friend in preparing for assessment. Dave likewise discussed his support strategies during assessments; *'my phone bill normally goes up during exam time as well, 'cos I'm always ringing some of the guys'*. Victoria also used feedback from her peers as she prepared for assessment; *'even last time we were practising for the OSCE. There were things that you wouldn't consider even mentioning it in the patient interview … I would never have thought of and there were things I would have thought of that they wouldn't have thought of, and that's where we just kind of pick up from each other'*.

Karen described how having a balance between study and other aspects of her life was a strategy which helped her not *'get stressed out'* about assessments; *'I have a lot of extracurricular stuff going on and I said 'I'm going to apply myself as much as I can, still have a good time'. I don't know, you have to just enjoy it as well and erm … I think the people who just really, really stress about it, they just work themselves up and they just don't … I don't know … maybe they … get enjoyment out of their stress and stuff, but I personally wouldn't'.* This links to Langley, Jesson and Wilson's (2010 p.83) findings that female pharmacy students are

more *'socially oriented and to be thinking ahead to the work life balance they want to make'*.

Gavin described how he used past papers to help build his confidence for examinations and be clear about the expectations; *'everyone kept saying 'why wasn't there a model answer up on Moodle* [virtual learning environment] *… that would have been a massive help, because then you would … you wouldn't … it felt like you were going into that exam quite blind in terms of … how much depth do they want us to go in to … I felt … some exams you go into and you've seen past papers, maybe two or three past papers and example answers, you've been to tutorials and you've got a good idea of how to answer the questions and you go to the exam, as in a lot of exams, especially me where you feel like you go into it quite blind*.' Hanna, Hall and Hennessey (2012 p.12) found that their participants also wanted model answers but reflected that *'while it is recognised that guidance is necessary, a comprehensive model answer could stifle independent learning and hamper the ability to apply knowledge'.* Haggis (2003) posits that requests such as Gavin's, for example essays, are an attempt by students to *'concretise the abstractions'* (p.101) of fundamental concepts such as *'argument'* and *'evidence'* (and in Gavin's case *'justification'* – see Chapter 4.1) that they find *'highly opaque'* (p.101). The challenge of this finding for those designing and delivering the MPharm is to find a way to address the opaqueness of these abstractions without encouraging students to resort to mimicry.

A strategy mentioned by Dave and Karen for lowering the stress of assessments was an awareness that grades do not count towards the final degree classification except in fourth year; *'it's not really essential that you, that you get really good grades … in 4th year, like I'll certainly put the hours in because obviously erm, you know, I wouldn't mind getting a really good, like er … masters MPharm degree, but if I'm brutally honest, I think I've been pretty slack this year because for that reason, you know, you can put in as much effort in as you want and it's not really, it doesn't really get you anywhere'* (Dave). Crossman (2007) highlights that students interviewed in her study also used various coping strategies to alleviate the stress associated with assessment. She gives one example of this as a student who *'drew upon techniques used as a musician when nervous prior to performances'* (p.319).

Like Bonnard in The French Window, participants appeared to be using a variety of different strategies in their assessment practices both in terms of how they approached assessments and of alleviating stress. In comparing participants' strategies associated with assessment to Bonnard's The French Window, which has an interesting and unconventional construction of background and foreground and with the subject side-lined, the strategies described by participants have been highlighted and have brought to the foreground the complex meshwork surrounding their learning and the practices associated with assessment. Coping strategies for stress were also described and this links strongly to the affective dimension of assessment which follows.

5.7 Sky over the red roofs – evoking the affective dimension

The fifth painting chosen was *Red roofs at Le Cannet* (1941) to represent the *affective dimension* expressed about learning and more commonly about assessment.

Figure 43. Red Roofs at Le Cannet (Pierre Bonnard, 1941)

Participants expressed a number of emotional responses to assessment and to feedback; primarily negative emotions hence the choice of a painting with a foreboding air. Bonnard generally painted with bright colours which are usually associated with positive emotions and very few of his paintings are dark and convey a sense of gloom as the sky over the *Red roofs at Les Cannet* does.

Kat and Jessica described frustration, usually in response to failure*; 'I wasn't expecting to fail as I was really confident with what I was doing, so I was more frustrated at myself because I know I can do it'* (Jessica). This experience of disappointment at failing an assessment was commented on by a number of participants. For Ewan it generated

annoyance with himself for not preparing as well as he felt he should have; *'I was annoyed at myself as well for failing it because I knew that I probably hadn't done as much work for that'*. He also expressed concern that he felt he was letting others down by failing; *'I feel as if I've let people down in some respects. Sort of, Mum and Dad, who've, sort of, done so much to try and get me through and get me to uni and all that, and sort of, to have to go to them and say 'I've failed'.* Lisa described feeling disheartened when she found out she had not done as well as she expected but explained that it could still motivate her to do better next time; *'the worst one is if you've not done well and you feel like you should have done well. That's disheartening, but … when you've not done well and you get feedback that erm … you've not done well, but you, you think like all that went really bad – it's still horrible to get like that final … thing there, but … it does motivate you'.*

Kat described a situation where she recognised she had invested a lot of time and emotional effort into an assignment and as a result was really disappointed when she received negative feedback; *'that was for an essay so I was quite into that and when I got my feedback back it was, that was quite a, I took it quite personally. I was quite disappointed when I got it back and I got a poor mark and I thought oh I really went for that ...'.* Georgia also described her defensiveness and nervousness in response to feedback; *'I should maybe erm be more neutral and just open, you know, about, you know, learning, so yeah I think it's just our human nature … yeah, we are like defensive, you know, and it's erm just like they can send me down so but I would be nervous first when I*

receive it but I still want to see it, you know, because I know that it's going to help me.' Kat, Georgia and other participants' previous experiences of assessment and the resultant emotional response to these appeared to hang over them like the foreboding sky in *Red roofs over Le Cannet*.

Fritz et al. (2000 cited in Rust 2002 p.153) identified that the *'emotional and psychological investment in producing a piece of work has a much stronger effect on the student than the relatively passive receipt of subsequent feedback'* and this echoes Kat's experience of feedback on an assessment that she had invested heavily in. Rust goes on to argue that because of this emotional investment, subsequent repetition of the task is more likely to be carried out by replication of the previous attempt, including mistakes, despite these being highlighted in the feedback.

Other potent emotions expressed included shock at failing (Donna), panic during written exams (Victoria) and fear of failure. In response to being asked how she got through learning a subject she struggled with, Kat laughed and responded *'would fear be an acceptable answer?'* She explained that fear of failure was a motivator for her; *'I want to pass, want to pass my exams, erm ... I don't .... ohhh ... I don't like to fail things, err ... and I don't like to feel stupid and that is a big motivator'.* Lisa also described not wanting to 'lose face' in front of other people; *'I think that's more of a … a pride thing, than a lot of … I like to know things myself because I don't feel … that I can contribute like in group discussion a bit, if I don't know exactly what I'm on about.'*

Pride was also expressed as a positive emotion, the only positive one expressed by participants in this study. Lisa described the feeling of pride in doing well; *'it's just a natural feeling if you've done well like – yes I've done well and that's great because I feel like I've deserved it.'*

Crossman (2007 p.316) identified very similar emotional responses from students in relation to assessment; disappointment, a sense of failure, anxiety, hurt, frustration, stress, loathing and hatred were all noted. As with this study, the expression of emotion when describing assessment was *'frequent, potent and deeply embedded in the data'* (p.323) and similar to the overall emphasis in this study, all the emotions noted by Crossman were negative. Unlike this study, however, she does not refer to any positive emotions. Crossman's findings and the findings from this study would indicate that '*assessment is clearly not a neutral context, although educational professionalism has cultivated the myth that it is'* (p.324).

Likewise Cilliers *et al.* (2010 p.702), in their study on the impact of summative assessment on medical students' learning, found that *'various dimensions of motivation and emotion featured prominently when exploring the link between assessment and learning'*. Crossman (2007 p.325) concludes that *'Higher Education would do well to consider further how teaching and learning occurs in a particular human context in which individuals interact, conduct relationships and experience feelings about these relationships'*.

Similarly to the emotional response evoked by Bonnard's dramatic sky in *Red roofs over Le Cannet,* assessment evoked a strong negative emotional response in these participants. Returning to Ingold's meshwork (2011) described in Chapter 4, these findings appear to confirm that student learning does not occur within a 'sterile' and cerebral environment, as indicated by some pedagogical theories, and as Crossman (2007) has highlighted, the human context and emotional responses are important lines in the weave of the meshwork of a student's learning that educators need to consider.

5.8 A white interior – free thinking unconstrained

The sixth painting chosen was *A White Interior* (1915) and this links to the theme that *'assessment constrains free thinking'*.

Image removed for copyright reasons

Figure 44. White Interior (Pierre Bonnard, 1932)

Following closely on from the theme discussed in 5.4 about the nature of assessment affecting learning and the affective dimension of assessment

in 5.7, Kat expressed the view that learning for her own sake is a free process which assessment can constrain; *'exams in my head are so tied with fear and trying to do things, cramming, you know trying to do things in that last week, I can't really disassociate exam time from positive learning experiences … when you're just learning for your own sake, when you just want to find things out, it's a very free process ... but when you're trying to learn for an exam, you're forcing your brain to go down one route … and sometimes it's quite, quite difficult and that's why the rote learning has to come in'.* Kat felt that the negative emotions surrounding assessment inhibited her from the learning experiences that she perceived as positive.

In relation to this free-thinking process, in the White Interior, as with Coffee, Bonnard has not allowed convention to constrain his thinking and his construction of the painting challenges the conventions of perspective, alongside which an element of mystery appears with the floor metamorphosing into a body. Bonnard contrasts the use of the white, which is rarely used by colourists and the bright and dark colours of outside in achieving this effect. The challenge around assessment in MPharm curriculum design is to harness this free thinking and the enjoyment of learning described by Kat without allowing assessment, which in HE is still required for 'certification' or 'qualification' purposes (Biesta 2009), to constrain these.

Similarly, Diane contrasted learning for herself and learning for assessment explaining that; *'learning for you* [is] *a lot more than just to*

get through an exam … it's more work but it's more enjoyable, you feel you get more out of it'. She relates this enjoyable learning to a final year module which takes a problem-based learning approach; *'there isn't that much teaching … a lot of it is up to you, and so, you really have to be organised from the start to know where you want to go … you have to kind of keep the, I suppose, the aims of what your trying to learn in view the whole time, it puts a lot of responsibility on you, but that's good … because you're always … taking control of your own learning and you're knowing where you want to go with it'.* Echoing the experience of participants in this study, Entwistle and Enwistle (1997), in their series of studies exploring student understanding, found that students described the experience of understanding *satisfying,* (good to have the feeling that you understood at last) and *complete* (a whole as previously understood things were suddenly integrated). In relating these practices back to learning as dwelling (Plumb 2008) discussed in Chapter 4, it would appear that participants' approach to assessment depends on whether they can identify themselves in their learning practices; whether they consider the knowledge they are constructing to be separate or part of themselves. This echoes with Hernadez's (2012) arguments for a learning-oriented approach to assessment as discussed in 5.5 above.

Entwistle and Enwistle's (1997) students also believed understanding to be *irreversible* (what is now understood cannot be de-understood) and this links to Kat's experience of the eureka moment described in Chapter 4.5; *'wow I get that now, that's brilliant … when you look back … it's really hard to think of them because once they're there they're as smooth*

as anything else so you can't pick them out individually because they're just part of your understanding'. This will be explored further in Chapter 6.

Elderfield (1998 p.42) explains how in *The White Interior*, as with many others of Bonnard's paintings, his construction of the painting challenges the eye to move rapidly backwards and forwards across the picture. The views expressed by participants in this study create a challenge for the MPharm Course Management Team to move their view backwards and forwards across the curriculum to ensure that it is designed in a way that ensures that students will demonstrate '*performances of understanding'* (Garner, 1993 in Biggs and Tang, 2007 p.75):

> *To use our learning in order to negotiate with the world and to see it differently involves understanding of a higher order.*

When participants felt part of the learning, were enjoying it and were in control of it, they felt that they understood. Biggs and Tang (2007) argue that when students 'really' understand concepts they act differently in contexts involving this concept and are capable of using it in unfamiliar or novel contexts (i.e. '*performances of understanding'* p.75) which is a desired outcome for professional development in courses such as pharmacy.

5.9 Conclusion

Using Bonnard's art in analysis has provided an alternative way of viewing participant's assessment practices. Aligning with Bonnard's technique of foregrounding the unexpected or diverting attention away

from the obvious has allowed illumination of these practices and previously un-noticed aspects of pharmacy students' learning.
It became clear that participants' conception of assessment as the summative examination was strong and consequently influenced their views of feedback. It also emerged that, aligning with other literature, the nature of the assessment impacted on their learning; MCQs tended to foster rote learning which participants perceived as negative. In addition, curriculum design appears to have a significant influence on participants' learning with 'load and dump' strategies reported. An over-crowded curriculum with no time for reflection or consolidation could be part of this.

Participants recounted reflecting back and understanding the relevance of some of the topics previously studied; it would have been good if this had happened earlier at the time of studying these topics and this will be a challenge for ongoing curriculum design. Following on from this, perceived relevance to the future appeared to heavily influence participants' learning.

Views on feedback as discussed earlier linked to participants' conceptions of assessment. Different approaches more consistent with learning as knowledge construction have been discussed.

There appears to be a significant emotional element to pharmacy students' learning often not acknowledged by literature or in teaching, learning and assessment practices. Assessment strategies related to the

study strategies discussed in Chapter 4 and participants adopted a number of strategies in response to their learning quest. There appeared to be significance in what participants described as *'learning for themselves'* and the creative processes that assessment appeared to inhibit. The challenge for pharmacy educators is to design learning activities and assessments that harness this *'learning for themselves'*.

The implications of these findings on assessment for curriculum design at RGU will be discussed in Chapter 7.

6. On difficulty: pharmacy students' struggles

> ***To struggle:***
> *1. To make forceful effort to get free*
> *2. To strive under difficult circumstances to do something*
> *3. To contend or compete*
> *4. To make one's way with difficulty.*
> (OED 2013)

In this chapter the focus is on participants' struggles within pharmacy education, both in terms of what they struggle with and how they get through these difficulties. The interest in struggles or difficulties started with the idea of threshold concepts and whether this would be a helpful way of framing or understanding pharmacy students' learning. In particular it was hoped that identifying the knowledge that participants found troublesome (Perkins 1999) would enable support to be put in place within the curriculum.

6.1 Threshold concepts and troublesome knowledge

Following on from Chapter 2, in discussing threshold concepts, Meyer and Land (2003 p.6) introduce the notion of liminality which they describe as a *'suspended state'* where understanding lacks authenticity. They develop this concept further in later work (Meyer and Land 2005 p.4) and discuss how *'stuck places'* can occur because of epistemological obstacles and may sometimes have an ontological dimension. They argue that the implications for curriculum design are that educators need to identify epistemological barriers and design learning activities that support the student through these *'liminal spaces'* (Land et al. 2005 p.2), which they describe as designing a *'supportive liminal environment'* (p.6).

In conceptualising threshold concepts, Meyer and Land drew on Perkins (1999) idea of troublesome knowledge. In explaining this Perkins identifies different types of knowledge; ritual knowledge, inert knowledge, conceptually difficult knowledge and alien knowledge. Meyer and Land (2003) add an additional category of tacit knowledge. Perkins defines ritual knowledge as being routine and meaningless in character, for example names and dates and inert knowledge as that which sits unused in the brain, for example passive vocabulary.

> *Whereas inert knowledge needs more active use, ritual knowledge needs more meaningfulness (of course, knowledge can be both inert and ritualised)* (Perkins 1999 p.7).

Perkins argues that conceptually difficult knowledge exists in all disciplines but particularly so in science and maths. These are disciplines often categorised as 'hard', although not using hard to mean difficult, which Matthew and Pritchard (2009) argue has developed as a misinterpretation of this metaphor, leading to an implicit difference in value (or de-valuing) of the disciplines. Alien knowledge is defined by Perkins (1999 p.9) as foreign and *'comes from a perspective that conflicts with our own'* or is counter-intuitive.

Meyer and Land (2003 p.9) define tacit knowledge as *'personal and implicit … emergent … and often associated with a specific community of practice'.* They argue that threshold concepts are often troublesome as they compound these different kinds of knowledge.

In considering implications of threshold concepts for course design, Land *et al.* (2005 p.5) discuss a *'pre-liminal variation'* in the way that students

approach or come to terms with threshold concepts. In my own professional experience, students often express discomfort at the start of the Stage 3 module that I co-ordinate. The module encompasses social and behavioural concepts which students perceive to have less scientific certainty than other subjects studied within the course. Land *et al.* (2005) describe a sense of disquietude or loss on the part of the learner as they let go the security of a previously held conceptual stance to enter less certain terrain; my own experience of pharmacy students echoes this. The authors raise the question of why some students tolerate uncertainty and others do not and argue that, often coming through one threshold conveys confidence that the student will find a way through the next one. This links to the findings discussed in Chapter 4.4 and to Rachel's email presented in Chapter 1.

In terms of this research, it was considered important to listen to pharmacy students and explore conceptual difficulties or obstacles and areas of discomfort that they experience in order to identify where *'supportive liminal environments'* (Land et al. 2005 p.6) may be needed in the pharmacy curriculum. During the interviews some participants reflected on issues they struggled with without prompting and often their artefacts related to these. Where struggles did not emerge naturally throughout the interview, participants were asked about aspects of the curriculum they struggled with, how that felt and how they got through those struggles.

Starting with threshold concepts, the question can be asked, do they provide a way of thinking about how we 'do' pharmacy education and specifically how we should support students in their journey through it? Assuming threshold concepts to be helpful, we would end up with a particular type of support as pharmacy educators would know what the problems are; conceptual ones which require *'scaffolding'* (Land et al. 2005) activities to support students in developing this knowledge. With a conception of professional knowledge such as this, we can specify in advance what the expert knowledge is going to be, with the acquisition of certain kinds of skills and conceptual knowledge that is static in nature, linking back to learning as acquisition.

During one of the early interviews, Kat described an artefact which did appear to align with a threshold concepts conceptualisation. As discussed in Chapter 4.5, she brought a picture of a bath to represent the 'eureka moment' in learning which appeared to link to the idea of threshold concepts and the highly significant nature of these moments but yet the difficulty in gazing *'backwards across thresholds and understanding the conceptual difficulty'* (Meyer and Land 2003 p.58). On further exploration however, Kat went on to explain that: *'the things I have done badly in are not always the things that I have found most difficult … it's a bit tricky because the science subjects I think, have more difficult concepts in them and more difficult material but I find the clinical things harder'.* Kat's insight into the type of difficulties she experienced and that she did not struggle with conceptually difficult aspects, led me to reflect on whether threshold concepts really were helpful in terms of framing the

types of difficulties that pharmacy students experience and whether the data in this research connected with threshold concepts in the way that I had expected it might. The perspective that appeared to emerge from the data in this study is much more dynamic in nature than threshold concepts would imply and this chapter will explore the nature of these difficulties and attempt to make sense of them. Before doing this, I shall explore the affective themes that emerged from the data around participants' struggles.

6.2 The affective dimension

As discussed in Chapter 5, the affective dimension of participants' learning experiences was highly evident throughout the interviews. When they talked about the struggles they experienced they using phrases expressing negative emotions like:
'frustration' (Lisa, Debra, Victoria & Jill); *'scared'* (Jill); *'stressed'* (Jessica); *'feeling stupid/like a failure'* (Kat & Jill); *'panic'* (Georgia & Victoria); '*nervous'* (Georgia) and *'causing grief'* (Gordon).

This affective dimension, as acknowledged in chapter 5, is one which is often ignored and the significance of emotion on learning is underplayed in much of the literature on student learning (Crossman 2007). Debra exemplified this by explaining that *'it's not that difficult to understand, just 'cos I'd worked myself up into a frenzy'* underplaying the effect that the emotion was having on her ability to learn.

As discussed in Chapter 4.4, belief in themselves was a positive emotion expressed by a number of participants and this was something they felt got them through their struggles (see 6.4 below); *'I'm at a stage where I think, you know, there is a way through everything, there is a way around every single problem, you just have to know which way to go round it so … erm, I guess that I'm just drawing from experience really'* (James).

One of the few texts which appears to engage with the affective in learning in HE is Barnett (2007). He argues that '*discomfort is a necessary part of the student experience'* (p.32) and this emotional experience is often displayed as anxiety which Barnett sees as an important part of 'becoming'. He acknowledges the many 'contingent' anxieties (p.34) affecting students around assessment, workload, performance in front of others, relationships and those associated with their 'material infrastructure' such as family, accommodation or finance, many of which participants in this study identified as artefacts that represented learning for them. Barnett argues that anxiety more fundamental to students' 'being' is to *'grapple with uncertainty'* (p.34). He argues that the *'idea of higher education calls upon students to come to their own interpretations, actions, judgements and arguments'* and in doing so they need to come into a *'felt relationship with uncertainty'* (p.34). These ideas of Barnett's of 'being' and 'becoming' as a student will be picked up in Chapter 6.3.4.

Barnett argues strongly that this affective dimension is an essential part of the learning process however educators need to find a way to support students in identifying and processing these emotions in a constructive rather than negative way, supporting students in their learning practices and enabling their development.

6.3 On difficulty

In attempting to make sense of the difficulties expressed by participants, an alternative way of conceptualising these may be found in George Steiner's (1978) essay 'On Difficulty'. In considering why readers find some types of poetry difficult, Steiner defined four broad categories of difficulty:

- Contingent difficulty, the need to look up a word or a term in a dictionary; *'Theoretically, there is somewhere a lexicon, a concordance, a manual of stars, a florilegium, a pandect of medicine, which will resolve the difficulty. In the 'infinite library' (Borges 'Library that is the Universe') the necessary reference can be found … in some time, at some place, the difficulty can be resolved'* (Steiner 1978 p.27). This could align with Perkins' (1999) ritual knowledge.
- Modal difficulty, Steiner characterises as difficulty not necessarily removed by immediate recourse to a reference*; 'there is, at empirical levels, understanding ... but no genuine comprehension. ... The process of looking it up does not lead to an unambiguous solution'* (pp.28-29). In the context of poetry, Steiner relates modal difficulties to modes of language which the poet uses to

refuse easy access to the reader *'we find* [the poem] *inaccessible or alien*' (p.28) another interpretation of this in the wider sense could be to do with the particular style of work. In this study, modal difficulty has been translated into modes of thinking, of which language may be a demonstrable element.

- Tactical difficulty which may be linguistic, structural or conceptual concerns that need to be actively processed; *'Obscurities, codes, hidden allegories or puzzles'* (Casey 2006) in poetry specifically. Steiner (1978 p.33) defines this as having *'its source in the writers will or in the failure of adequacy between his intention and his performative means*'; the poet may be choosing to be obscure for stylistic effect. In the context of this study, this type of difficulty has been used to define conceptual concerns that need to be dealt with cognitively before understanding can be reached, analogous to threshold concepts (Meyer and Land 2003).
- Ontological difficulty, which confronts the reader with *'blank questions'* (p.41) which Steiner wrote about in the context of poetry, about language and the *'nature of human speech'* (p.41). In this study, a wider interpretation is of difficulty about the nature of the world or of practice where one has to change oneself in order to carry on; *'essential questions, the very existence, being, of the thing is in question here'* (Casey 2006). This type of difficulty involves a repositioning of the self or a transformative element which can only be resolved by *'coming into Being'* (Steiner 1978 p.46) in another way.

Although Steiner's analysis relates to literature and to poetry in particular, it has wider applicability and forms a useful tool for considering the difficulties described by participants in this study. Some of Steiner's definitions have been extended using the data in this study and in doing so, not only can we open up pharmacy education by looking at the data in a different way, but at the same time can move Steiner's concepts forward. It must be borne in mind, however that these four categories relate to poetry which usually involves only the cognitive or affective dimensions. One or two of the participants in this study described practical (or kinesthetic) difficulties which cannot be easily categorised using Steiner's definitions. For the purpose of this analysis, these practical difficulties have been categorised as modal i.e. as ways of working.

Relating threshold concepts to Steiner's categories, these could be considered tactical difficulties which students need to negotiate before reaching understanding. Very few of the difficulties recounted by participants in this study can be categorised as tactical which would emphasise the perspective discussed earlier in this chapter that threshold concepts do not appear to be a helpful way of understanding the difficulties experienced by participants in this study.

In this chapter, each of Steiner's categories will be explored in turn and related to the difficulties described by participants. The majority of difficulties recounted have been categorised as either modal or ontological, with none categorised as contingent and very few as tactical.

6.3.1 Contingent difficulty

Contingent difficulties are ones which can be resolved by referring to a reference source. No difficulties described by participants in this study could be categorised as contingent. Examples might be considered to be terminology or pharmaceutical definitions that students may need to look up to understand, however none of the participants in this study recounted difficulties of this kind.

There were very few Stage 1 and 2 students interviewed as part of this study, so this may be a possible reason for contingent difficulties not being recounted. It would be expected that students in earlier stages of their course would have more difficulties with terminology and language associated with their discipline (similar to my own difficulties with 'discourse' discussed in Chapter 1.3.2) than those in the latter stages. In addition there was only one student interviewed whose first language was not English and she had been educated in an English-speaking school. Again it may be expected that someone whose first language was not English may experience more contingent difficulties in their studies.

6.3.2 Tactical difficulty

Tactical difficulties may be considered to be conceptual concerns that need to be dealt with cognitively before understanding can be reached relating closely to Perkins' (1999) conceptually difficult knowledge. Very few participants recounted difficulties that may be categorised as tactical. Those who did tended to describe factual, scientific knowledge and concepts. Gavin identified that '*sciency stuff … like spectroscopy and all*

that' was what he found most difficult but went on to explain that *'once you do get your head around it, you can't get it wrong'.* Likewise Lisa found that she struggled with physical pharmacy and chemistry which she felt were not her *'strong subjects'* but found that understanding how these subjects fit into *'practical application'* later in the course helped. Others, such as Jill and Victoria, struggled with physiology but related this to never having studied the subject before rather than finding it conceptually difficult. *'… biology aspect and physiology, erm, I found that I had to put a lot of work into that, and I didn't have high school level biology so I did struggle a lot. The way I kind of got round that was, obviously I had to put a lot more work into those subjects … I take everything right down to basics, so I didn't, kind of like, delve into Pharmacology and Therapeutics textbooks or anything like that, I had a Pharmacology Basics or Pharmacology for Dummies, just so I could get around the … get the basic points first and then kind of work out or work inwards from that and get more detail'* (Jill). Jill found that by taking things back to basic concepts and studying from there helped her get over these initial difficulties.

Ewen acknowledged that often different individuals struggled with different subjects; *'I think it comes down to sort of quite a personal thing'* and Helen similarly felt that *'if you are really struggling with something, it's just not your strength'* linking back to Matthew and Pritchard's (2009) assertion of disciplinary preferences and strengths. This links to Steiner's next category of difficulty, modal difficulty, which will be discussed below. Students who gain a place to study pharmacy tend to have a strong

science background and good science grades from school or previous university studies. As discussed in Chapter 2, Langley, Jesson and Wilson (2010) found that liking science and ability in science were among the most important influences on the decision to study pharmacy implying strong positivist epistemological beliefs in those applying for pharmacy courses. It could be argued that this means that pharmacy students do not experience as many tactical difficulties.

This is the category of difficulty that most closely aligns with threshold concepts and the data in this study appears to problematise threshold concepts as a conceptual framework for understanding the difficulties that pharmacy students experience.

6.3.3 Modal difficulty

Modal difficulties can be described as those not necessarily removed by immediate recourse to a reference or to do with the particular style of a work. In the case of participants in this study and in pharmacy education in general, modal difficulties can be considered to be those which relate to ways of approaching different subjects or ways of thinking about the knowledge required. Many of the difficulties recounted by participants in this study may be categorised as modal and, as opposed to threshold concepts which did not feature heavily, this appears to be an area which affected many of the participants in this study. Steiner (1978 p.28) refers to the shift into first person associated with modal difficulties; *'I find it difficult to grasp'* rather than *'it is difficult'* and this is echoed in many of the participants' accounts of their difficulties.

As described above, Helen felt that often she struggled with something that was *'just not her strength'* which she believed was to do with the *'many kind of different disciplines within pharmacy'*. Some participants struggled with the type of thinking required for a specific subject within the course. Peter found that he struggled with any essay style assessment; he enjoyed the topic but struggled with the mode of assessment; *'English based, language based ones like, you know SPAP* [Social Pharmacy and Practice] *and PLAP* [Pharmacy Law and Practice] *... the information was quite, like some of the things you did was quite, it was interesting but writing the essays and the exam, learning for that exam was just horrible'.* Peter's struggles with language as a demonstrable element of a mode of thinking align closely with this study's interpretation of Steiner's modal difficulties.

Donna indicated that she struggled when there was a lot of information to process or to assimilate*; 'I find when there's probably a bit too much information and too much erm … like too much evidence … erm on a specific topic and what evidence to get at.'* She recounted (Chapter 4.1) how she used colour and summary notes to process and 'close down' the volume of information. Gavin likewise struggled when he didn't understand the expectations or how to approach the way of thinking in a subject; *'last year … we were always told … that you had to justify and keep justifying, say why, why, why and everyone kept saying why … nobody understood to the extent you should justify'.* Physiology was the subject that Jessica identified she struggled most with but she explained

that was because of the need to think in an integrated way; *'Physiology … was the biggest jump for me, but once you got into it, it was fine. It's the one I enjoyed the most … but erm … I found it hardest just adapting … nothing's separate … I can't treat them as separate systems and learn one, just by itself, because, everything's integrated … if I'm writing an essay, it's not just oh that's this part of my notes only, because it was like your whole folder … you can't just narrow it down to one thing. That was what I found quite difficult about it'.* Dave felt the same way, describing physiology as *'extensive'* and *'intertwined'.* As discussed in Chapter 1.2, integration of knowledge from a wide diversity of disciplines is an enactment of the pharmacist's professional practice and Jessica and Dave articulate how they struggled to do this. Integration was one of the Principles of Pharmacy Education identified during consultation with the profession (Royal Pharmaceutical Society of Great Britain 2007) and underpinned the development of the new educational standards for education of future pharmacists (General Pharmaceutical Council 2011) which explicitly states that *'curricula must be integrated'* (Standard 5.1 p.18). Supporting students in being able to integrate the sciences of pharmacy will be discussed further in Chapter 7.

As discussed in tactical difficulties (6.3.2 above), Jill described how she got through not understanding something by breaking it down, taking it back to basics and then seeing how it all related together; *'Erm … it is really frustrating and you do think, oh I'm never going to get over this, I'm never actually going to get this, but what I tend to do is … I'd break it down into small bits, if it was … was like a disease state … first of all I'd*

take it right back down to basics and erm … maybe just look at what the disease state actually is, so then how we're trying to treat it, and then maybe just the classes of drugs that we use to treat that so I would kind of try and put that back together'. Kat talked about getting *'inside something'* to *'find out how it works*' both practically and figuratively and felt she struggled when she was unable to do this.

Barnett (2007 p.36) describes the type of struggles recounted by Donna, Gavin, Jill and Jessica as epistemological anxiety. The difficulty and anxiety associated with the student *'framing something orderly, something grounded, out of the chaos of the entities – terms, concepts, theories, procedures – that are swirling in his mind'*.

Some participants described how they needed to see the application of a topic to understand it rather than just learning abstract knowledge. Where there were obvious connections, Lisa felt that she could make more sense of something; *'… that's why I prefer something like the clinical side of things because if you've got a case study that you … could be doing at the same time, like the lectures - it's … there's an obvious connection there. You're doing it and then doing it in another form, but when it was the physical pharmacies and the chemistry and everything like that, they were two separate things and they just didn't join… join up … I get most frustrated … if I can't see the links.'* When Lisa couldn't see the connections, she had difficulty in understanding.

Emily found it easier to motivate herself when she started to see the bigger picture*; 'I don't actually go out and find out what's going to be in the module that I kind of … take it as it comes and just cross that bridge when … when it comes to it. But like I just take each day and each lecture and each coursework and then finally at the end I'll see the bigger picture starting to form …'*. She also had practical difficulties which although not strictly within Steiner's definition of modal difficulty, may be considered to do with the mode of working; *'But erm Dosage Form Design was my biggest hurdle when it was the extemp exam* [extemporaneous dispensing - the practice of manufacturing a medicine on a small scale from raw ingredients] *Erm … I just couldn't get it, and I couldn't get it and I'd to re-sit it a few times. It was … I just couldn't ... that was the biggest hurdle I could think about a couple of years ago* (Emily).

Returning to assessment, Karen felt she struggled when she was unsure of how she would be assessed; *'I just wasn't sure of the exam format and I was just really confused about what was going on'*. Debra felt the same; *'I was just, for some reason, couldn't get my head around it and I didn't understand what we were supposed to put in the question and I just worked myself up into sheer desperation.'* This links back to the anxieties expressed around assessment which were discussed in Chapter 5.

When talking about his struggles, James identified them as opportunities to learn and saw them a bit like a rite of passage; *'I just take it more of an opportunity to gain knowledge and the more you work through things*

and the more you struggle with things the more knowledge you gain … because of it and it will probably be a better learning experience, I think anyway' akin to Barnett's (2007) discomfort being a necessary part of higher education.

Diane reflected on the way of working she applied in learning using Problem Based Learning (PBL) and the responsibility for staying organised; *'there isn't that much teaching, so it's … a lot of it is up to you, and so, you really have to be organised from the start to know where you want to go and you know … and really figure out … You have to kind of keep the, I suppose, the aims of what you're trying to learn in view the whole time, it puts a lot of responsibility on you, but that's good because you're always … you're taking control of your own learning and your knowing where you want to go with it.'* Biggs (1999) argues that PBL is alignment between learning and assessment. The nature of the knowledge gained in PBL is different from the *'declarative knowledge' (*p.71) which examinations assess and Biggs argues that the student experiencing PBL is prepared for professional practice as they develop the professional skill of solving problems that belong to that profession. Diane commented positively on her enjoyment of PBL, although she initially struggled with the volume of information available to her and how to process it, and that PBL felt more like *'learning for you, a lot more than just to get through an exam'* (Diane). Nel *et al.* (2008) describe learners and facilitators experiences of doing PBL for the first time and the anxieties for both associated with *'learning to sit with uncertainty'* (p.204). Participants in this study did not articulate their anxieties as

about coping with uncertainty but rather expressed this as difficulty with the thinking processes required. Supporting students in developing an approach to problem solving and a framework for PBL is an important element of the MPharm course at RGU, with an increasing emphasis on PBL as the student progresses through the course and this study shows that creating an environment that supports the approach to thinking and practising for PBL is essential.

Participants' modal difficulties appear to relate closely to Hounsell *et al.*'s (2005) ways of thinking and practising discussed in Chapter 2.2.2.1 and this appears to be a useful way of conceptualising some of the difficulties experienced. This study has not identified all the ways of thinking and practising specific to pharmacy in the way that other authors have, in relation to biosciences and history (McCune and Hounsell 2005, Hounsell and Anderson 2009). This would be an interesting aspect of pharmacy student learning for future research and will be discussed further in Chapter 7.

In Chapter 1, the complex and changing nature of pharmacy knowledge was discussed. Pharmacists are required to integrate knowledge from a complex array of different sources of information to their practice and it is these *'knowledge practices'* (Waterfield 2010) which participants tended to describe struggles with, the way of thinking or the approach to learning practices or in creating knowledge for themselves.

6.3.4 Ontological difficulty

Ontological difficulties are ones where one has to change oneself in order to carry on, those questions and difficulties relating to being. In this study the ontological difficulties can be considered to be those which relate to 'being' and 'becoming' a pharmacist and to professional identity.

In many cases, the difficulties arose because participants had projected a particular professional identity onto their future and as a result, failed to see the relevance of some subjects; *'So you could have three different types of tablets, whereas to me they were all just tablets, I never really saw, I couldn't make a relationship between that and Pharmacy. To me that was more pharmaceutics, and the production of it, which I wasn't really … I didn't really register that as being a pharmacist … it's the clinical stuff and the dispensing of medication, and all that sort of things. So I think that was probably one area that I really struggled in'* (Ewan).

Gavin reflected on the same sort of activity; *'back in … third year I remember doing … do you know, when you make the products … erm … the mini projects we did over six weeks, I think I was making soaps or something or doing something with viscosity of gels or something, I remember thinking at that stage … why are we learning some … some of the stuff.'* He went on to say that on reflection he could understand why he was doing it but struggled to motivate himself at the time; *'then when you think about it properly you can understand that it is important to know that kind of thing … at the time that's not how it felt, it felt that there was more important things that were actually related to the job*

that we didn't know but we were still in labs making gels and stuff' (Gavin).

This echoes with other researchers' findings on students' views of industrial pharmacy. Kirby-Smith et al (Kirby-Smith, Portlock and Brown 2008) found that 39% of pharmacy students in their study might consider industry as a career but, like Ewan and Gavin, most wanted a career with direct contact with patients and 92% were interested in provision of medicines, expertise and advice rather than in the development and manufacture of medicines. As in this study, students in Kirby-Smith et al.'s research had studied topics relevant to the pharmaceutical industry but had little understanding of, and therefore enthusiasm for, the role of the pharmacist in industry.

Lisa takes quite an insightful view of her difficulty with this pharmaceutical science knowledge, which many have argued is the thing that differentiates the pharmacist from other healthcare professionals making them the expert in medicines (Buckton 2003, Craig and Wright 2011, Florence 2011). *'I never understood why we needed to know if* [a drug] *had a hydroxyl group on it … that's a chemist's job, not a pharmacist's job. And then it was, the end of second year, I was doing a placement somewhere and … they were saying 'well I know there's an interaction between these two drugs because this maybe has like a hydrogen and that doesn't react with this and/or this' and it just clicked. It was like 'ok you might not use it all the time, but if you want to be the best that you can be and just click with these interactions or these drug*

related problems … you're not going to need to know everything about it, that's for somebody going into industry or something, but you need to at least know'… at the time it's really hard because obviously you couldn't have predicted that you would ever have made that … but if you remember 'ok I might need it' or if you remember that 'I'm obviously going to need it if they're asking me to do it' then it kind of helps' (Lisa). Interestingly it was on a placement in practice that Lisa developed the insight into why she needed to know the issues she had been struggling with. She began at that stage to understand that this knowledge is part of 'being' a pharmacist. There is a strong argument here for more placement-based learning in the MPharm course which echoes other author's findings and conclusion on pharmacy students desire for more placements (Olalekan et al. 2011, Taylor and Harding 2007), the need for them (Langley and Aheer 2010) and the need for a review of funding and support from government (Langley, Wilson and Jesson 2010).

In a lot of cases, the difficulties in seeing the relevance of something resulted in participants struggling to motivate themselves to learn a subject; *'... it's really hard to keep yourself motivated, especially when you don't, you don't click with the subject, like if you don't like the subject, you don't see the point in the subject. Erm, that's probably like the hardest points of learning'* (Lisa). Georgia likewise reflected that she didn't understand the purpose of what she was doing in early years but later in the course realised the point of it; *'the little essay's you use to do in the first year and second year or reports … lab reports. At that time I didn't know the purpose, I just thought, oh it's just, you know they want*

to give us lot of work, you know … but looking back, I realise that it was actually the beginning, you know. They wanted to you know, build us you know through first year, second year, to teach us and how to write and how to, you know, erm … how to erm … kind of reflect back what we've done in the lab for example, so I thought it was very erm … every time when I looked back and realised 'oh yeah, yeah, that was the point …' (Georgia). She explained that once she understood why she was doing something, she found it easier to motivate herself to learn; *'it went through my mind and I knew the purpose of it, you know kind of erm, subject, you know it become, became more interesting to me'* (Georgia). Although Lisa and Georgia reflected back (from final year) and understood the relevance of what they had previously studied, it would have been good if they had understood the relevance of this at the time. This will be discussed further in Chapter 7.

Barnett (2007 p.36) argues that the student in higher education is having to deal with uncertainty but is also *'being pulled and, at the same time is propelling himself into the world, to be authentic in the world'*. This ontological anxiety *'is that of the student's being protesting to this call to declare itself to stand in the world'* (p.36) and, Barnett argues sits alongside the epistemological anxiety discussed in the previous section. These ontological dimensions of higher education, Barnett asserts are about a student 'being and becoming'.

> *She ventures into a new place, which she discovers for herself, but in doing so, discovers herself. She comes to know herself, albeit in that place …This is not just a new beginning; it is becoming'* (Barnett 2007 p.55).

Similarly, returning to Ingold's (2011) concept of the primacy of movement discussed in Chapter 4, he argues that *'the movement of life is specifically of becoming rather than of being'* (p.72). Participants' ontological struggles therefore appear to be about their 'becoming' in the movement along their journey to professional practice.

6.4 Getting through the struggles

Whilst they were speaking about struggles, participants were asked to reflect on how they got through these and on any support that would have helped. Many of them reflected that additional support from tutors would not have helped and that they had to get through it for themselves: *'I think you have to hurt when you're doing these things to get the hurt light to come on, and by hurting, made me think that you had to struggle with it, like to learn … it's got to happen, it's part of the learning process, you'll be better off because of it'* (James), analogous to Barnett's (2007) *'anxiety-provoking place'*.

Linking back to 6.2 and discussion of the affective dimension of learning, in many cases participants reflected on their belief in themselves: *'I mean I've struggled with things I found difficult but I've always kind of known that I would get there in the end'* (Helen). They recognised the emotional impact of difficulties but believed that they would get through these because they had done so before.

Debra mentioned that more small-group tutorials would have helped her and Georgia explained that tutor support was helpful. Georgia discussed

going to tutors for help but, since I was Georgia's project tutor prior to conducting the interview, this statement may have been made for my benefit.

Being organised and having effective study techniques (see Chapter 4.1) was also something that participants believed got them through their difficulties: *'When I struggle with, like memorising stuff, that's more challenging, I have to make my little mind-maps then …'* (Dave).

For quite a number of participants, peer support was important in getting through their difficulties. For some this meant support in terms of empathy; *'it makes you feel better as well because you get a bit of chat and you feel like you're going through something the same …'* (Lisa). '*… my phone bill normally goes up during exam time …'* (Dave). For others the peer support was a way of sharing understanding and learning from each other; *'I do work with somebody else but we can always find a way of working through that and finding another … she's in another group to me, which means that if I don't have an answer in my group, she will more than likely have an answer in hers*' (Donna). Similarly Gavin reflected, '*… where you're sitting trying to work things out was much better to do with a few of you sitting trying to work it out …'*. Victoria described how discussing with others helped her calm down and understand things better; *'We were just completely talking it out … I went in not knowing really what was going on and I came out and I was a lot more calmer and confident and I had a better idea … then there might be something that I would have a better idea of than the rest of them*

and you would talk it out and then we just brainstorm and … just and things … and you tend to remember more than if you were to sit down with a book and read and read and read' (Victoria).

The message that came through clearly from participants on getting through their struggles was that they did not really want additional support to be provided by staff but saw these difficulties as things they had to get through by themselves.

> *It is a lone journey. No matter the extent of interaction with others, of dialogue or of collaboration, still the student's development, anxiety and becoming are hers, and hers alone* (Barnett 2007 p.63).

6.5 Conclusion

As discussed in Chapter 5, the affective dimension of participants' learning experiences is a significant one which is often ignored by the literature on learning and by teaching, learning and assessment practices. Supporting students through the difficulties they experience should involve explicit acknowledgement of emotion and support for this. Using Barnett's argument that discomfort is a normal part of the HE experience, reassurance of this may be considered to be an important element of that support.

In this study, Steiner's categories of difficulty appear to be a useful heuristic for understanding the nature of struggles experienced by pharmacy students. Participants primarily expressed modal or ontological difficulties, those that relate to 'being' or 'becoming' which can be related to them developing a professional identity. Ways of thinking and

practising appears to be a helpful way of understanding the modal difficulties experienced, implying a need for more explicit acknowledgement of these dimensions by those teaching pharmacy students.

To conclude this chapter, one of the participants should have the final say. Lisa reflected on knowledge she felt was not relevant at the time, but that could be considered to be part of the pharmacist's professional identity and when it all fell into place for her; '*You really need to realise it yourself. It needs to click with yourself, but that's only once you realised 'I want to be a really good pharmacist you know, I want to know this.' That's maybe when it's just going to click' (Lisa).*

7. Conclusions and Reflections

> *'If we are patient and gentle, in observing ourselves and others, we will find connections'* (LaCava 2012 p.8)

Stephanie LaCava was an awkward, depressed teenage girl growing up in a foreign country who found security in strange and beautiful objects. As an adult she writes about this experience in 'An Extraordinary Theory of Objects' (LaCava 2012) using an interesting narrative style, moving from past to present, whilst at the same time presenting research and analysis of her objects, as she seeks to understand and make peace with her childhood. She reflects:

> *I did not plan for so many connections or for the themes that emerged in this collection ... a web started to slowly show itself, a net to soften the fall from my memories … during this process I found peace in the lack of randomness of what I thought were childhood fixations* (LaCava 2012 pp.5-6).

Commentators explain that Stephanie's journey *'reveals the magic of seemingly ordinary objects to distract us from our lives, construct order in an unpredictable world, and reveal the power of stories to shape and reflect who we are*' (Amazon UK 2013).

In many ways I can empathise with Stephanie; I was not planning for so many connections or themes to emerge from the artefacts that participants chose. I also did not expect to find many of the theoretical connections that I did throughout the analysis of this data. What has emerged is a web of objects, theories and ideas that have shaped my understanding of participants' learning practices. This chapter will pull together this *'meshwork of inter-woven lines'* (Ingold 2011 p.70).

7.1 Reflections on the findings

Pring (2000 p.23) argues *that 'educational research must attend to what it means to learn'* and this study has done exactly that in the context of pharmacy education. This study did not aim to generalise but instead aimed to present findings about the way RGU pharmacy students progressively construct meanings about their learning and as a result the knowledge created is illuminative and situated.

Chapter 4 specifically addresses the first research question:

- Can the use of artefacts and material objects in the interview process afford access to what learning means to pharmacy students, their learning practices and the assumptions that underpin what it is to master the field of inquiry that is pharmacy?

The chapter concludes that using artefacts in the research process has afforded an in-depth look at the group of pharmacy students' learning practices and use of this method is unique to date in pharmacy education research. The emergent themes allowed insight into specific practices adopted by participants, their 'rituals' associated with learning, pharmacy's knowledge, motivation for learning and ways of learning.

The artefacts brought along by participants and the meanings they ascribed to them, exemplify the complex meshwork surrounding student learning and their learning practices, particularly the unnoticed practices or collateral realities (Law 2009). Motivation and social interaction were important *'lines in the meshwork'* (Ingold 2011) for participants.

The participants' journey towards becoming a pharmacist, and what it means to master the field of inquiry that is pharmacy, appears to encompass Ingold's (2011) idea of the primacy of movement with different kinds of movement being intrinsic to participants' descriptions of their learning experiences. Participants' learning is constructed through their meshwork (Ingold 2011) and this study has highlighted and explored the interconnections and the interweaving of lines.

Participants indicated that the process of choosing and reflecting on the artefacts was useful in allowing them insight into their learning practices (or aspects of their meshwork) that they may not have previously been aware of. This practice of using artefacts to explore abstract ideas and concepts is one which I have incorporated into my practice (see 7.4.1) and have continued to use in research.

Alongside using artefacts in data collection, this study used fine art in the analysis of some of the data. Chapter 5 addresses the research question:

- What are pharmacy students' assessment practices and how do these influence their learning practices?

The chapter concludes that using Bonnard's art in the analysis has provided an alternative way of viewing participant's assessment practices. Aligning with Bonnard's technique of foregrounding the unexpected or diverting attention away from the obvious has allowed illumination of these practices and previously un-noticed aspects of pharmacy students' learning.

Participants' conception of assessment as the summative examination was strong and consequently influenced their views of feedback and the nature of the assessment impacted on their learning; MCQs tended to foster rote learning which participants perceived as negative. In addition, curriculum design appears to have a significant influence on participants' learning with 'load and dump' strategies reported. An over-crowded curriculum with no time for reflection or consolidation could be part of this and this has started to be addressed in MPharm development (see 7.4.2 below).

Participants recounted reflecting back and understanding the relevance of some of the topics previously studied; it would have be good if this had happened earlier at the time of studying these topics and this is a challenge for ongoing curriculum design. Following on from this, perceived relevance to the future appeared to heavily influence participants' learning.

Assessment strategies related to the study strategies discussed in Chapter 4; participants adopted a number of strategies in response to their learning quest. Participants described *'learning for themselves'* and the creative processes that assessment appeared to inhibit. Learning activities and assessments that harness this *'learning for themselves'* will be explored further in 7.4.2.

Views on feedback linked to participants' conceptions of assessment. Different approaches more consistent with learning as knowledge construction will be discussed further in 7.4.2.

Chapters 5 and 6 both address the research question:

- How significant is the affective dimension in pharmacy students' learning?

There appears to be a significant emotional element to pharmacy students' learning often not acknowledged by literature or in teaching, learning and assessment practices. The affective dimension of participants' learning experiences is significant and supporting students through the difficulties they experience should involve explicit acknowledgement of emotion and support for this. Edwards (2006) reflects on McWilliam and Jones (1996 cited in Edwards 2006) use of the metaphor 'learning as a love affair' and how McWilliam elsewhere (1996 cited in Edwards 2006) uses this to *'disrupt certain rational/mentalist notions of learning'* (p.8) and in exploring the affective dimension of learning, this study has attempted to do the same. Ertl and Wright (2008 p.201) assert that *'more studies … which take into account affect as a key factor in the student learning experience, are needed'* and this study has directly addressed this issue.

In considering the difficulties experienced by pharmacy students, Chapter 6 addresses the research questions:

- What difficulties do pharmacy students encounter in their learning and how might these be conceptualised?

- How useful are threshold concepts as a conceptual framework for understanding pharmacy students' learning processes?
- How do pharmacy students negotiate the 'liminal spaces' of pharmacy education and deal with uncertainty in the pharmacy curriculum?

The chapter concludes that Steiner's (1978) categories of difficulty appear to be a useful heuristic for understanding the nature of struggles experienced by pharmacy students. Participants primarily expressed modal (relating to a particular way of thinking or practising) or ontological (relating to 'being' or 'becoming' as a pharmacy student or to their professional identity).

Ways of thinking and practising appears to be a more helpful way of understanding the modal difficulties experienced rather than threshold concepts, implying a need for more explicit acknowledgement of the epistemological and ontological dimensions of learning in pharmacy by those teaching pharmacy students.

An attempt was made to explore liminal spaces and uncertainty but this was not particularly successful and will be discussed further in 7.3 below.

The final research question was:

- What issues need to be considered in designing a curriculum that supports pharmacy students to negotiate the journey to becoming a pharmacist?

The implications of these findings for practice, which will address this research question, will be discussed in 7.4 below but prior to that, I will reflect briefly on the use of theory in this thesis.

7.2 Reflections on theory

A range of different but aligned theories have been used throughout this thesis, each theory bringing something different to the project; in some cases to illuminate, in others to 'disrupt' and to look at differently. This has become a movement of interweaving of lines (Ingold 2011) along which analysis and reflection has taken place. No attempt has been made to develop a grand integrative theory however as the analysis progressed, resonances between the theories emerged.

Metaphor as a theoretical construct has been woven through the meshwork of this thesis highlighting tacit assumptions and beliefs (Sfard 1998), underpinning conceptions (Paechter 2004), and shared ideas and concepts (Gibbs 2007) in much of the literature in learning. Considering learning as knowledge creation or as dwelling has afforded different understandings of pharmacy student learning. Maclure (2003 p.9) argues that the use of *'binary oppositions'* in education creates an *'us and them'* culture of teacher and learner and this undermines an understanding of learning as knowledge creation. Considering learning in this way leads us to different ways of thinking about how we support students in their knowledge creation rather than traditional mentalist views of teaching and this has been explored throughout the thesis.

Using theory from anthropology, Ingold's (2000, 2007) dwelling perspective and Plumb's (2008) interpretation of 'learning as dwelling' has afforded a way of viewing pharmacy education and pharmacy students' learning that is currently unique in the literature.

Taking a socio-material approach (Fenwick 2010) to data collection has enabled has enabled us to attend to learning practices and has allowed participants to articulate abstract concepts which they may have otherwise struggled to do.

Sociological theory of practices (Law 2004, 2009) and in particular collateral realities (Law 2009) has allowed the previously un-noticed to become foregrounded. In the same way, using fine art and Bonnard's paintings has brought the unexpected to the fore and diverting attention away from the obvious to allow illumination of these practices and previously un-noticed aspects of pharmacy students' learning. Mol's (2007) idea of 'multiple realities' has afforded another way of conceptualising pharmacy students' learning.

Using English literature and Steiner's (1978) theory on difficulty has helped conceptualise and understand the types of difficulties that pharmacy students experience and therefore how to support them in these difficulties around 'being' and 'becoming'.

Throughout the thesis, the data have problematised theory for example threshold concepts which do not appear to be a helpful theory for understanding learning in pharmacy.

7.3 Reflections on strengths and limitations of the study

As noted previously, this study aimed to present data about the way Robert Gordon University pharmacy students progressively construct meanings about the world and their learning rather than attempting to generalise however the data do echo those in the literature, adding credibility to the findings. There are a number of strengths and limitations of the study.

Most of the participants in the study were in final year with only a very small representation from other years. These participants were at the 'almost about to go out into practice' stage of their studies and therefore this will certainly have had an impact on their views and practices. This is both a strength and a limitation. An example of the possible impact of low numbers of Stage 1 or 2 students is the type of difficulties experienced; as discussed in 6.3.1 no contingent difficulties were recounted. Participants had also come to realisations about the relevance of subjects which students in earlier years may not have yet reached.

My dual role as lecturer and researcher, as discussed in 3.4.1, was both a strength and a potential limitation. In common with Wallman *et al.*'s (2011 p.181) arguments, I felt that being close to the material and *'being*

able to interpret the lingo and underpinning meaning used by the interviewees' has contributed positively to the analysis. They said things to me that they knew I would implicitly understand which an 'outsider' would have not. In terms of limitations of my dual role, I attempted to take account of this and where possible reduce any negative impact of power (as discussed in Chapter 3.4.1 and 3.4.3).

The method of analysis (using mind-mapping) was a strength in analysing the artefacts and the data relating to assessment, however became a limitation when it came to analysing the struggles participants experienced. The participants' 'voice' and their narrative was lost by using this technique so, as discussed in Chapter 3.3, a different method was adopted.

As discussed in Chapter 3.2.1, not conducting a final focus group with all participants after the interviews were completed to 'validate' the interview findings and check the interpretations with participants could be considered a limitation. Throughout the project however, my attempt to *'integrate reciprocity into the creation of knowledge'* (DiCicco-Bloom and Crabtree 2006 p. 317) along with the use of artefacts and attending to participants' 'voice' in analysis has accounted for any limitations as a result of this change in methodology.

The lack of one coherent theoretical perspective or philosophy underpinning the research could be argued to be a limitation however I

would assert that it is a strength, allowing multiple ways to view the same data, leading to new understandings as discussed in 7.2. above.

At the start of the study the aim was to explore liminality, liminal spaces and 'uncertain places' with students. During discussion of their difficulties participants were asked about this, for example how it felt when they did not fully understand something. They struggled to articulate aspects of their practice relating to uncertainty, perhaps because most of the participants were in final year where they felt less uncertain about their practice. This idea would be useful to explore in further research, perhaps by using artefacts to gain access to this somewhat abstract concept, asking participants to choose an artefact that represented uncertainty in learning.

The interviews were carried out in 2010 and due to the time taken to analyse the data and write the thesis, practice and the MPharm curriculum has changed in the meantime. In particular, as will be discussed further below, redeveloping the course for reaccreditation to the new educational standards (General Pharmaceutical Council 2011) by the General Pharmaceutical Council in early 2013, enabled many of the curriculum related concerns identified throughout this thesis to be addressed. In addition to this my own role changed towards the end of writing and will have had an influence on how I viewed the data. This will be discussed further below when considering the impact of the research.

7.4 Reflections on the impact of the research

Bates (2002 p.403) argues that the *'impact of educational research on both policy and practice is often complex and indirect rather than linear and straightforward'* and this has been my experience of conducting this project. Lee (2002 p.26) argues that *'for research to be 'recognised' by the academic community it needs to have meaning for that community, it needs to influence the community and to move the discipline forward.'* I believe that this research has meaning for my practice, my own academic community as well as the pharmacy professional community in terms of moving the discipline forward and I will consider the impact on each of these in the following sections.

7.4.1 Impact on me and on my own professional practice

Completion of this Doctor of Education has provided me the opportunity for me to *'pursue high-level research as part of* [my] *own professional development and as a contribution to professional practice'* (Edwards 2006). In common with many others commencing the EdD (Edwards 2006), I had commenced academic employment without a doctorate and pursuing these studies has enabled me to conduct doctoral research in an area I am passionate about (learning) and has been a truly transformational experience. My journey through the modules (discussed on Chapter 1.3.2), supported by interested and challenging tutors, and in the *'genuine multi-professional learning environment'* (Portlock, Castle and Mills 2001 p.25) created by a cohort of professionals from widely varied backgrounds, opened my eyes to different ways of looking at my practice and my research.

My teaching, learning and assessment practices have evolved during this course. Some examples of this are discussed below.

In general, I have tried to do much more 'foregrounding' of implicit assumptions and the tacit elements of assessment.

I have much more explicitly acknowledged and brought to the fore the troublesome nature of knowledge with my students. For example at the start of Social Pharmacy and Practice, which (as discussed in Chapter 6.1), students often find difficult at the start of the module, I introduced them to the concept of troublesome knowledge and showed them Barnett's (2007 p.147) quote that they should be:

> *required to venture into new places, strange places, anxiety-provoking places. This is part of the point of higher education. If there was no anxiety, it is difficult to believe that we could be in the presence of a higher education.*

In response to Gavin's comments (see Chapter 4.1) about struggling with how to justify, I developed an exercise for that module where students had to justify a recommendation, using reference sources, on tamsulosin which had recently become available as a Pharmacy medicine. The exercise involves tutorial discussions about their response and during those I can almost see a light-bulb going on in their heads with a *'now I understand what you mean by justification'* response from them.

In October 2010, I had discussion with colleagues about the 'perceived relevance' findings of this study and whether we therefore needed to do

more contextualisation in places of the course. Our practice at that time was to deliver the theory then discuss the application of that often bringing in visiting speakers to explain how they use the subject material in their practice. We began to wonder whether the discerning nature of the current generation of students i.e. wanting to see immediate application of their knowledge (Twenge 2009) meant that we needed to 'market' better why we are teaching things to motivate them. Perhaps those visiting speakers could come in and do an initial 'contextualisation' lecture to set the scene rather than coming in at the end of a module.

Again, late in 2010 I had discussion with colleagues about the 'conception of assessment as the summative written examination' finding. As a course team we developed an Assessment and Feedback calendar, with the nature of feedback and expected date specified for every assessment. Continuous assessment was given the same emphasis in this document as written examinations and we have avoided talking about assessments just in terms of exams.

I have continued to use artefacts with students in different settings. I deliver a lecture to new first years about Learning in Pharmacy and show them a number of the artefacts from this study (see slide in Appendix X) to try and raise their awareness of the un-noticed aspects of their own individual learning practices. In addition to this I have regularly asked my own tutees to bring along an artefact to our meeting to help focus our discussions on their progress. One new Stage 1 student told me about her 'staircase' on which she felt like she was sitting on the bottom step.

Each time we meet now, we chat through where she feels she is on that staircase and what she wants to do to move to the next step.

In December 2011, I applied for and was promoted to senior lecturer and Course Leader for the MPharm. This is an example of a direct impact of this research on my career. In this role I now speak to all prospective and actual applicants about becoming a pharmacist and use Duggan's (2010) sciences of pharmacy with them to discuss the integrative nature of the practice of a pharmacist (and that this is one of the exciting things about being a pharmacist!)

My practice as a researcher has also evolved throughout this study, both in terms of conducting and writing about research. To use Ingold's (2001) idea, I have 'dwelled' in this project rather than built it. Stronach *et al.* (2007) refer to Jones' (1997 cited in Stronach *et al.* 2007 p.185) reflections on Peshkin's 'I's where he notes the omission of the academic 'I' *that constructed the entire account'*. My own 'academic I' has evolved during the development of this thesis and has enabled me to start to publish some of this work (Appendix XI). My capacity to analyse, theorise and reflect critically on my own and others' practice has matured and my confidence in my research stance has become assured in a large part due to the support of my supervisor; many of the directions I have taken in this thesis would not have happened without those 'conversations'. This has stimulated me to continue on this developmental social process (Brown 1997) and to continue to *'improvise a movement along a way of life'* (Ingold 2010).

7.4.2 Impact on my academic community

The project has advanced the knowledge of pharmacy students' learning practices and as a result has had and will continue to have an influence on MPharm curriculum design. Bates (2002 p.405) discusses how the impact of educational research is *'frequently indirect, unstructured and often mediated through individuals'* and much of the impact of this study has been mediated through my own personal practice and has been discussed in 7.4.1 above.

In terms of the wider impact of this research in the MPharm at RGU, I have been an integral part of the team redesigning the MPharm to meet the new GPhC educational standards (General Pharmaceutical Council 2011) and for reaccreditation in early 2013. The new curriculum has a greater focus on integration of science and practice and much more contextualisation of material alongside increased placement opportunities to apply learning to practice. This may help address the issue raised in Chapter 4 and 6 about students' perceived relevance. Many of curriculum concerns identified through the findings of this study will start to be addressed in this new course which, as Course Leader, I will now be leading in implementation and delivery.

One of the big challenges for the MPharm course team is supporting students through the modal and ontological difficulties expressed by participants in this study. Supporting students through the developmental social processes (referred to in Chapter 1.2.4) is an important part of HE. Perhaps using Law's (2009) collateral realities

concept and bringing to the fore students' un-noticed practices may be a way of supporting students through these difficulties.

It will also be important to acknowledge the nature of pharmacy knowledge as 'emergent' and explore ways of supporting students in their own knowledge creation. Pace (2009 p.96) discusses how:

> *References to a discipline may disguise the fact that there are radically different communities of practices within a single department that can generate quite distinct learning experiences.*

This is certainly the case within the School of Pharmacy and Life Sciences at RGU and the findings from this study indicate that students may need more support in recognising and respecting those differences whilst reconciling with their own practices.

Taking a socio-cultural perspective on interdisciplinarity, McArthur's (2009) view is that supporting students in finding their disciplinary 'voice' whilst retaining and developing their own 'voice' is important. She argues that teachers have an important role to play in this and that:

> *It is important that we share not only our disciplinary authority with students but that we, as teachers, do so in our own voices. … legitimising the concept of diverse voices – students can see that their teachers hold different views and express their disciplinary knowledge in diverse ways; thus students can be reassured that the purpose of their learning is to be able to develop an ability to do likewise. Common meaning making (even for the purposes of disagreement) and diverse voices are perfectly consistent … using our own voices provides the necessary base for creating states of intersubjectivity and a blend of the teacher and student's interdependent authority* (McArthur 2009 pp.123-4)

These two ideas of diversity of voice and of interdependent authority link closely to the concepts discussed in Chapter 5 of developing learning-oriented assessment that involves feedback, that encompasses both

Haraway's concept of diffraction and knowledge creation practices which engage students. This will be an interesting and challenging concept to explore further with the MPharm team.

Reconsidering staff feedback practices is another aspect of development work which is ongoing and needs to continue. Adopting Haraway's (2004) mapping of interference may be an alternative way to conceive of feedback and this will be interesting to explore with staff and students.

Students' fundamental conception of assessment as the end of semester examination may be addressed as the MPharm course continues the move away from assessing only 'declarative knowledge' in exams. In addition to this, I plan to conduct a student project to explore this specific issue and to explore students' perceptions of what they want from examination feedback, the impact on staff workload in the context of Hanna, Hall and Hennessey's (2011) practices for examination feedback.

The impact of the findings on my academic community as the MPharm course team at Robert Gordon University has continued throughout the study and will continue into the future.

7.4.3 Impact on the pharmacy professional community

This research has made an original contribution to professional knowledge of what it means to learn as a pharmacy student, the learning practices enacted and the difficulties they negotiate along the way.

This study has afforded understanding of the professional journey that pharmacy students make; that developmental social process (Brown 1997) of 'being and becoming' (Barnett 2007) as a pharmacy student.

One of the personal challenges for me, in terms of Hammack's (1997 p.250) ethical responsibility as a researcher contributing to a field of inquiry, will be to publish the findings in pharmacy professional journals. It may perhaps be easier to publish in educational literature where the methodological approaches may be better received and it may be more difficult to gain acceptance in pharmacy professional journals, however part of my professional and ethical responsibility as a researcher generating knowledge in pharmacy education is to share that in a way that will inform pharmacy as a profession.

Having reflected on the changes impacting on the pharmacy profession (Chapter 1.2.1 and 1.2.2) and on pharmacy education both nationally (Chapter 1.2.3) and locally (Chapter 1.2.4), then having conducted the research, it would be helpful to have a look at where we are at the present time. Returning to the new educational standards discussed in Chapter 1.2.3 (General Pharmaceutical Council 2011), some of the findings of this study, for example the issues for pharmacy students in relation to 'being and becoming', may create a challenge for these standards to encapsulate what it means to 'be and become' a pharmacist. Standards, by their very nature are required to articulate things in a particular semantic form which implies certainty, transparency and can be measured; what Strathern (2010) calls the 'tyranny of transparency'.

The new standards, although a considerable improvement on the 'old' indicative curriculum and although go some way towards capturing knowledge, skills and attitudes rather than simply pharmacy knowledge, do not encompass some of the 'ways of thinking and practising' (Hounsell *et al.* 2005) required of pharmacists. Because of the nature of the reaccreditation process, an evidence based approach which measures whether standards have been met, the standards do not encompass some of the 'uncertainties' and tensions of emergent practice. The new standards will be reviewed in due course (following two years of application to the process) and as a newly appointed member of the GPhC Reaccreditation and Recognition Panel, I may be in a position to help inform this process using the findings of this research.

7.5 Concluding reflections and 'what next?'

Before concluding this thesis, it is important to consider other areas of research and other research 'problematics' that have emerged whilst conducting this study.

7.5.1 Further research

A number of further areas of research have been identified throughout this study, some related to the methodology used, some to the findings and others to theoretical concepts.

The use of artefacts has been highly successful in this study and this method has already been used in another study in which I have supervised students in exploring their peers' motivation for learning. As

discussed in Chapter 4.2, it would be interesting to use artefacts to explore 'things' that get in the way of learning (or barriers to learning). It would also be interesting to explore 'uncertain places' with students using artefacts, since participants in this study struggled to articulate this in interviews.

Professional identity was an aspect of participants' motivation which was missing. As discussed in Chapter 4.4, it would be interesting to explore this further now that pharmacy students can (and are actively encouraged to) become members of the new professional body for pharmacy, the Royal Pharmaceutical Society.

In terms of pharmacy students' assessment practices, their active engagement with assessment criteria (as discussed in Chapter 5.5) will be interesting to explore. Feedback as a field of inquiry is one which I am continuing with and have been, and will continue, to research feedback and students' learning. As discussed above, feedback on written examinations is 'next on the agenda'.

The affective dimension is one that has been significant in this study. Although it was not specifically asked about, it was a clear theme in many of participants' discussions. This aspect of pharmacy students' learning will be interesting to explore further.

A theoretical direction which emerged very late in writing this thesis (too late for the concepts to be incorporated) is Barnett's (2007) idea of will to

learn, which he relates to being and becoming, rather than the more psychological construct of motivation that has been used throughout this thesis.

7.5.2 Concluding reflections

In conclusion, this study adds to the professional knowledge of what it means to be a pharmacy student, to negotiate a *'movement along a way of life'* (Ingold 2010) and to experience *'being and becoming'* (Barnett 2007) by using perspectives from sociology, anthropology, fine art, English Medieval literature and by attending to metaphors throughout. Rather than an ending, this is more of a beginning; a springboard to an academic, research, professional and personal future.

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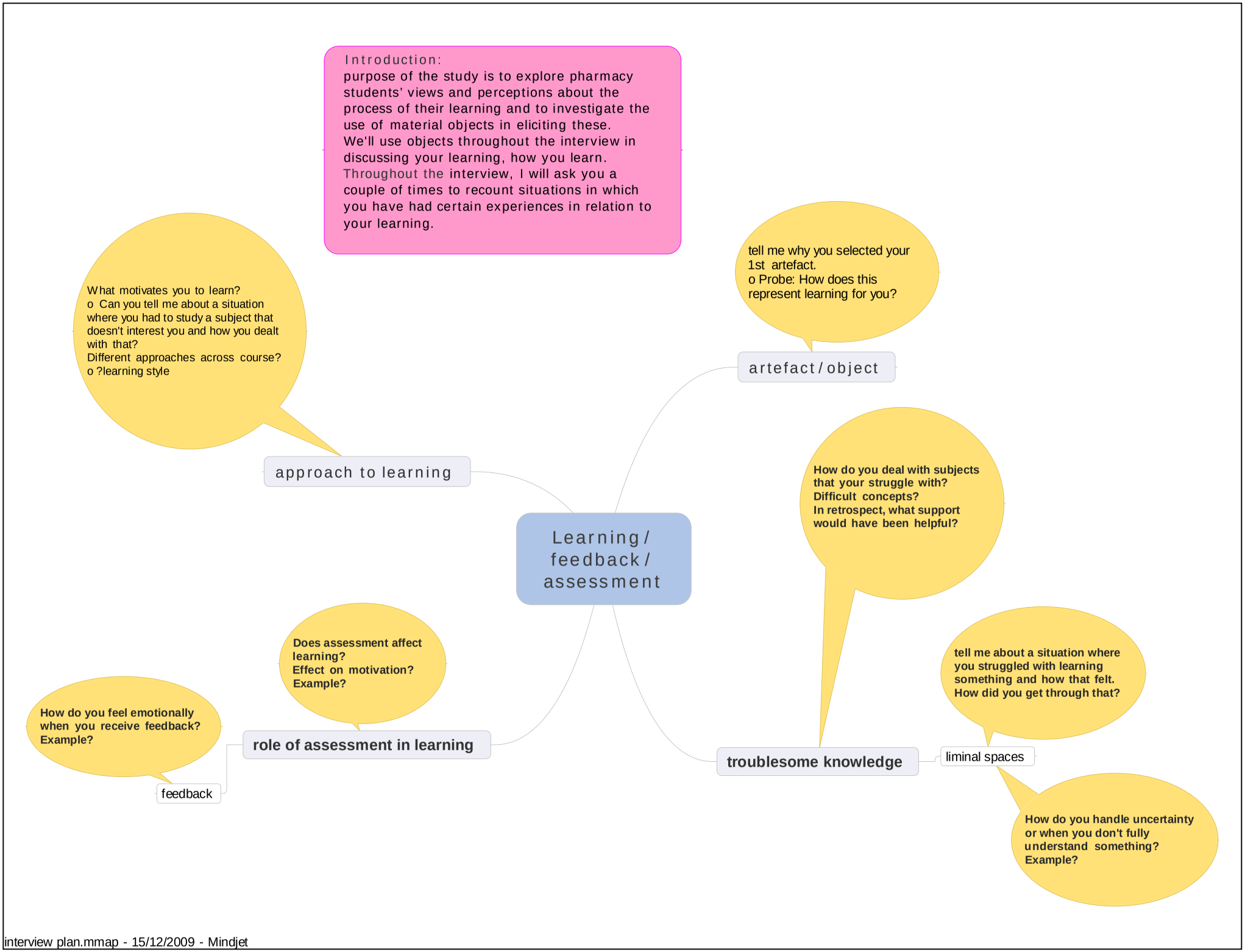
Appendices

Appendix I. Conceptual Map

Concept map created of all the assumptions, values, theories, research problems and ideas informing the project (Maxwell 2004). November 2010.

Appendix II. Interview Plan


Introduction:
purpose of the study is to explore pharmacy students' views and perceptions about the process of their learning and to investigate the use of material objects in eliciting these.
We'll use objects throughout the interview in discussing your learning, how you learn.
Throughout the interview, I will ask you a couple of times to recount situations in which you have had certain experiences in relation to your learning.
Learning / feedback / assessment
approach to learning
What motivates you to learn?
o Can you tell me about a situation where you had to study a subject that doesn't interest you and how you dealt with that?
Different approaches across course?
o ?learning style
artefact / object
tell me why you selected your 1st artefact.
o Probe: How does this represent learning for you?
role of assessment in learning
Does assessment affect learning?
Effect on motivation?
Example?
feedback
How do you feel emotionally when you receive feedback?
Example?
troublesome knowledge
How do you deal with subjects that your struggle with?
Difficult concepts?
In retrospect, what support would have been helpful?
liminal spaces
tell me about a situation where you struggled with learning something and how that felt.
How did you get through that?
How do you handle uncertainty or when you don't fully understand something?
Example?

Appendix III. Participant invitation email

February 2010

Dear XX

I am writing to ask if you would be willing to assist me with a project, which is being carried out by me as part of my Doctor of Education at University of Stirling. The project is in the area of pharmacy students and learning.

This project will be exploring pharmacy students' views and perceptions about the process of their learning and investigating the use of material objects in eliciting these.

If you agree to participate you will be asked to attend two different sessions.

Firstly:
I would like you to choose three objects that represent learning for you and then take part in an individual interview with me to explore these; the interview may last up to an hour. The objects should be things that that represent what learning means to you or what learning is about for you. You may wish to:

- take a photograph
- select an object
- choose a song or
- choose a picture or something else.

It's up to you!

Secondly:
Once all the interviews have been conducted, I will invite you to attend a focus group with other students to explore themes that have emerged from the study. I hope to run this focus group towards the end of semester 2 (2009/10).

I have attached an information sheet about this project for you to read carefully.

EdD participant information sh...

If you are willing to take part, please would you reply to this email and we can then agree a mutually convenient time to conduct the interview.

Kind regards,
Mrs E

Mrs RM Edwards
Lecturer in Pharmacy Practice
& MSc in Clinical Pharmacy Course Co-ordinator
School of Pharmacy and Life Sciences
The Robert Gordon University
Schoolhill
Aberdeen
AB10 1FR

☎ +44 (0)1224 262516
Fax +44 (0)1224 262555
✉ r.edwards@rgu.ac.uk

Appendix IV. Participant information sheet

ROBERT GORDON UNIVERSITY•ABERDEEN

UNIVERSITY OF STIRLING
The Stirling Institute of Education
ideas everywhere

PARTICIPANT INFORMATION SHEET
STUDY TITLE: PHARMACY STUDENTS AND LEARNING

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask me if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

What is the purpose of the study?
The purpose of the study is to explore pharmacy students' views and perceptions about the process of their learning and to investigate the use of material objects in eliciting these.

Why have I been chosen?
This study is being undertaken at The Robert Gordon University and as a registered student on the Master of Pharmacy course you are being invited to participate.

Do I have to take part?
You do not need to participate, participation in the study is voluntary and your decision to participate will not influence any relationship with The Robert Gordon University; neither your progression through the MPharm course or your relationship with me as your lecturer will be affected. You are free to withdraw at any time, without giving a reason.

What will happen to me if I take part?
You will be asked to attend two different sessions. Prior to session 1, you will be asked to choose three objects that represent learning for you and then you will be interviewed by the researcher about these objects and your learning; the interview may last up to an hour. Once all the interviews have been conducted you will be asked to attend session 2 with other students to explore themes that have emerged from the study.

What are the possible benefits of taking part?
There is unlikely to be any direct benefit for you from participation in this study. However, it is hoped that findings from this study may help us to identify potential training, development or support needs of pharmacy undergraduates at the Robert Gordon University, Aberdeen.

Will my taking part in this study be confidential?
Yes. All information about you collected during the course of the research will be kept strictly confidential. Any information about you that is published will be anonymised so that you cannot be recognised.

What will happen to the results of the research study?
The results of the research study will be fed back to the research team and will be written up as a doctoral thesis for the award of Doctor of Education. All material will be preserved for the life of the research project and may be used in publication, education, lectures, broadcasting and on the internet.

Who has reviewed the study?
The study has been reviewed and approved by The Stirling Institute of Education Research Ethics Committee.

Contacts for further information

If you have any questions or require any further information about the project, please contact:

Mrs Ruth Edwards (r.edwards@rgu.ac.uk) Telephone – 01224 262516 (Principal Investigator)

If you have any concerns about the project which you feel unable to address with the Principal Investigator you may contact:

Dr Derek Stewart (d.stewart@rgu.ac.uk) Telephone – 01224 262432

In addition, under The Stirling Institute of Education ethics procedures, you have a formal right to complain to the Head of The Stirling Institute of Education, if you have any concerns about the research process.

Appendix V. Consent form

ROBERT GORDON UNIVERSITY•ABERDEEN

UNIVERSITY OF STIRLING

The Stirling Institute of Education

ideas everywhere

CONSENT FORM
STUDY TITLE: PHARMACY STUDENTS AND LEARNING

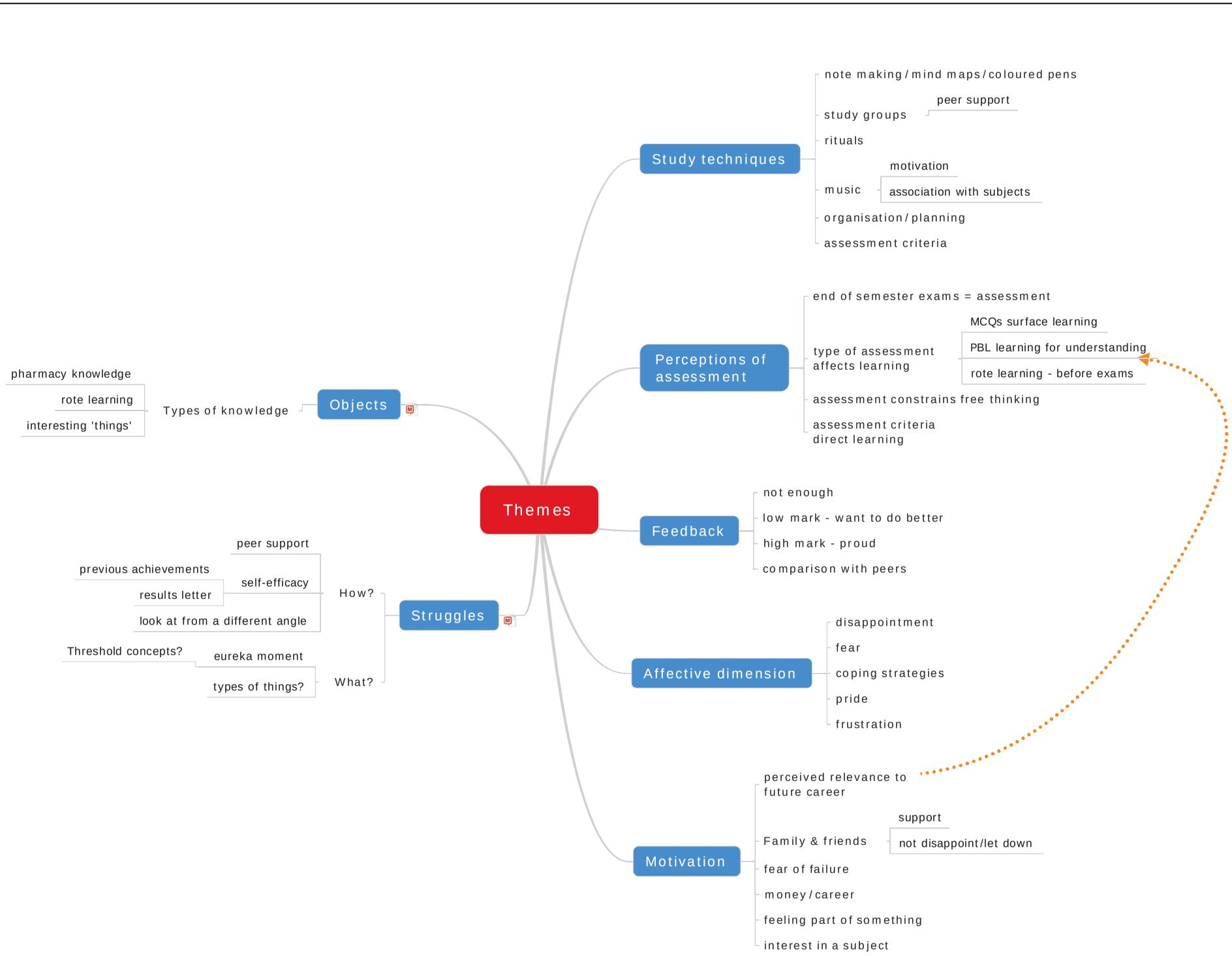
Please initial box
I agree to take part in the above study.

		Please Initial Box
1.	I confirm that I have read and understand the information sheet dated 30th November 2009 for the above study and have had the opportunity to ask questions.	
2.	I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my progression through the Masters of Pharmacy course being affected.	
3.	I understand that the recordings of the interview will be transcribed and these transcriptions will be anonymised and that anonymous quotations may be taken from these transcripts and used in publication, education, lectures, broadcasting and on the internet.	
4.	I consent to digital photographs of my artefacts being taken, stored electronically and that these may be used in publication.	
5.	I agree to take part in the above study.	

Name of participant	Date	Signature
Researcher	Date	Signature

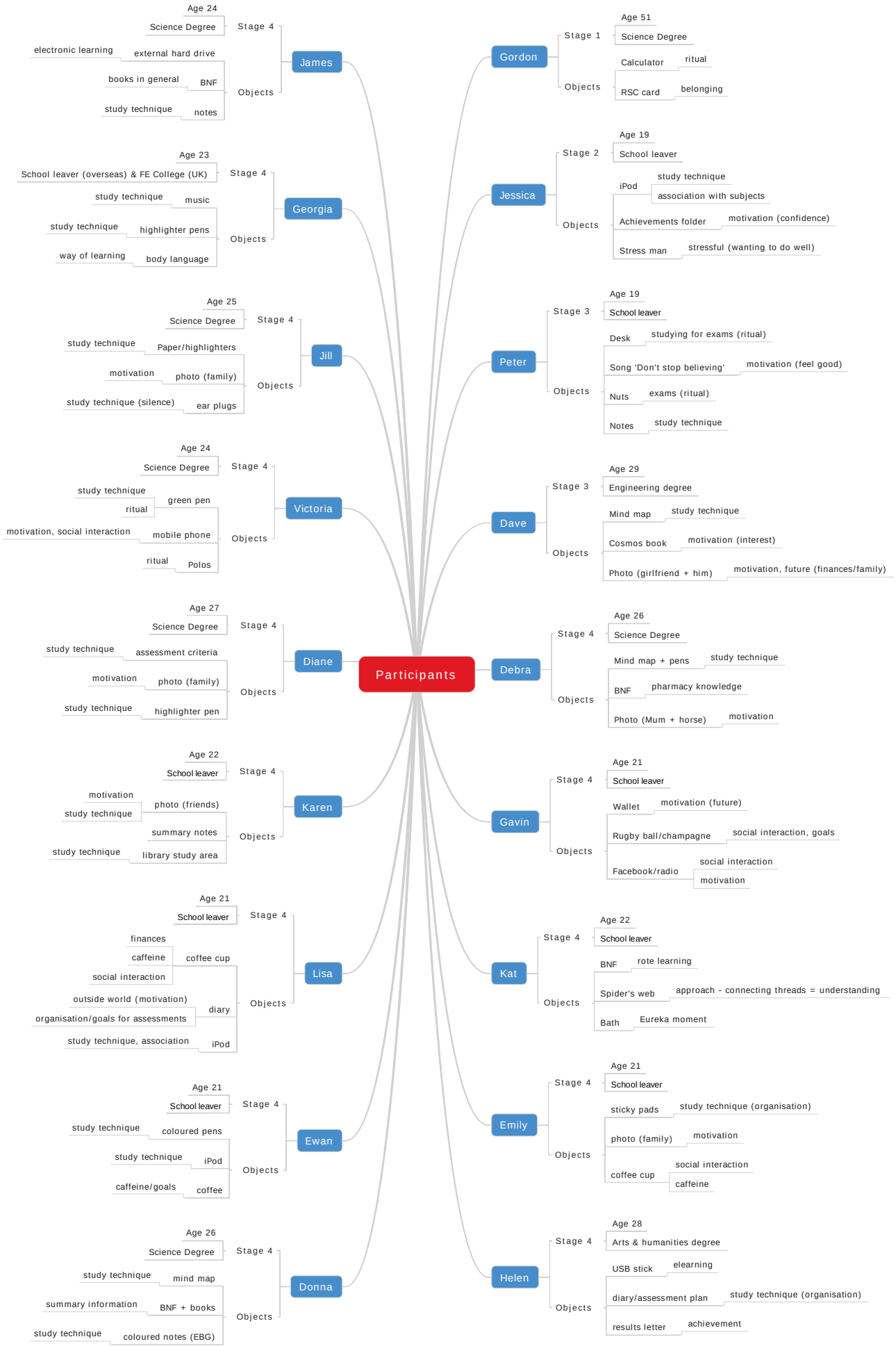
Appendix VI. Themes - analysis

Mind map showing overall themes.


Themes
Study techniques
note making / mind maps / coloured pens
study groups
peer support
rituals
music
motivation
association with subjects
organisation / planning
assessment criteria
Perceptions of assessment
end of semester exams = assessment
type of assessment affects learning
MCQs surface learning
PBL learning for understanding
rote learning - before exams
assessment constrains free thinking
assessment criteria direct learning
Feedback
not enough
low mark - want to do better
high mark - proud
comparison with peers
Affective dimension
disappointment
fear
coping strategies
pride
frustration
Motivation
perceived relevance to future career
Family & friends
support
not disappoint/let down
fear of failure
money / career
feeling part of something
interest in a subject
Objects
Types of knowledge
pharmacy knowledge
rote learning
interesting 'things'
Struggles
How?
peer support
self-efficacy
previous achievements
results letter
look at from a different angle
What?
Threshold concepts?
eureka moment
types of things?

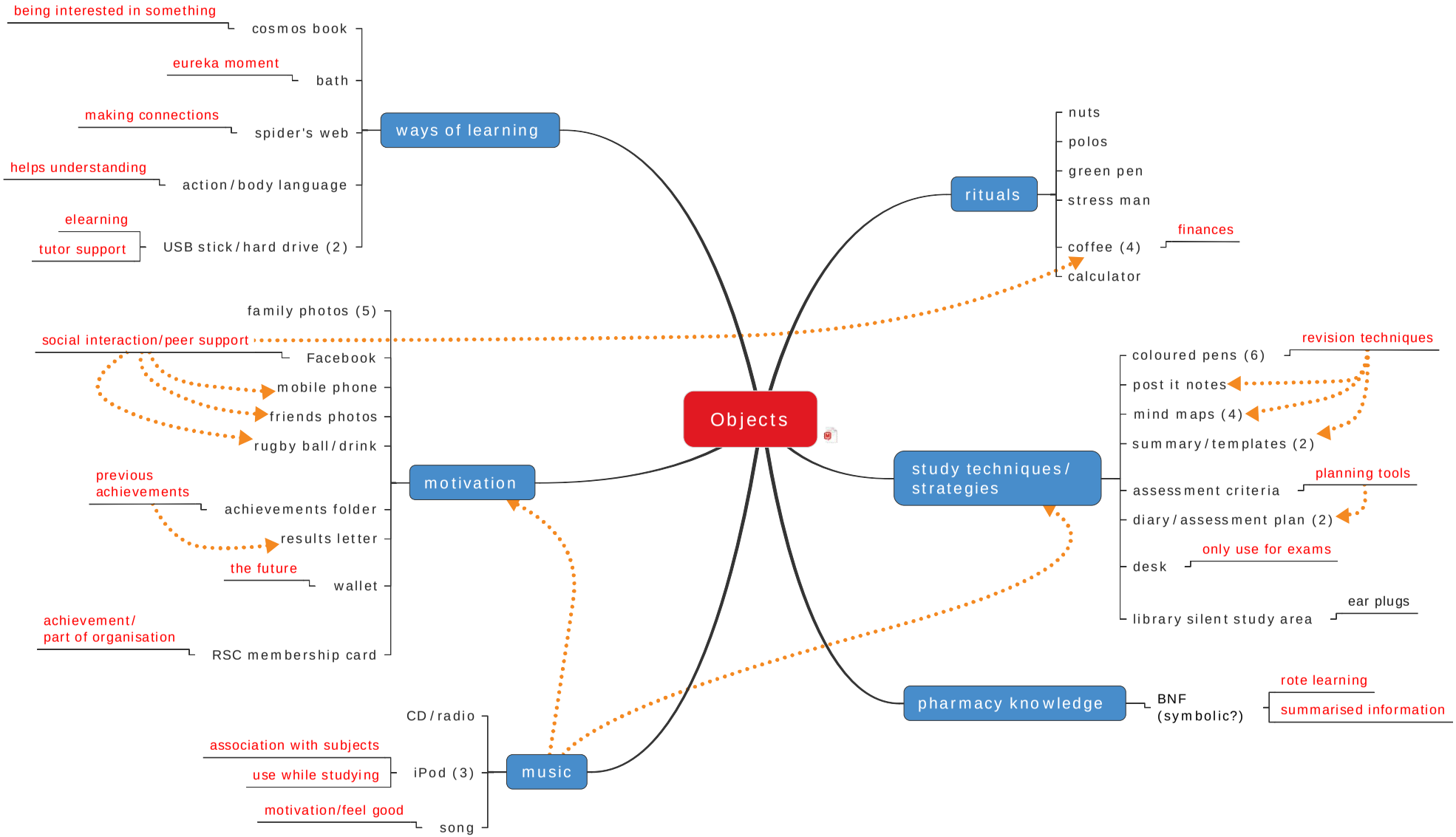
Appendix VII. Participants

Mind map showing each participant, their objects and the meaning ascribed by them.


Participants
James
Stage 4
Age 24
Science Degree
Objects
electronic learning
external hard drive
books in general
BNF
study technique
notes
Georgia
Stage 4
Age 23
School leaver (overseas) & FE College (UK)
Objects
study technique
music
study technique
highlighter pens
way of learning
body language
Jill
Stage 4
Age 25
Science Degree
Objects
study technique
Paper/highlighters
motivation
photo (family)
study technique (silence)
ear plugs
Victoria
Stage 4
Age 24
Science Degree
Objects
study technique
green pen
ritual
motivation, social interaction
mobile phone
ritual
Polos
Diane
Stage 4
Age 27
Science Degree
Objects
study technique
assessment criteria
motivation
photo (family)
study technique
highlighter pen
Karen
Stage 4
Age 22
School leaver
Objects
motivation
photo (friends)
study technique
summary notes
study technique
library study area
Lisa
Stage 4
Age 21
School leaver
Objects
finances
caffeine
coffee cup
social interaction
outside world (motivation)
diary
organisation/goals for assessments
study technique, association
iPod
Ewan
Stage 4
Age 21
School leaver
Objects
study technique
coloured pens
study technique
iPod
caffeine/goals
coffee
Donna
Stage 4
Age 26
Science Degree
Objects
study technique
mind map
summary information
BNF + books
study technique
coloured notes (EBG)
Gordon
Stage 1
Age 51
Science Degree
Objects
Calculator
ritual
RSC card
belonging
Jessica
Stage 2
Age 19
School leaver
Objects
iPod
study technique
association with subjects
Achievements folder
motivation (confidence)
Stress man
stressful (wanting to do well)
Peter
Stage 3
Age 19
School leaver
Objects
Desk
studying for exams (ritual)
Song 'Don't stop believing'
motivation (feel good)
Nuts
exams (ritual)
Notes
study technique
Dave
Stage 3
Age 29
Engineering degree
Objects
Mind map
study technique
Cosmos book
motivation (interest)
Photo (girlfriend + him)
motivation, future (finances/family)
Debra
Stage 4
Age 26
Science Degree
Objects
Mind map + pens
study technique
BNF
pharmacy knowledge
Photo (Mum + horse)
motivation
Gavin
Stage 4
Age 21
School leaver
Objects
Wallet
motivation (future)
Rugby ball/champagne
social interaction, goals
Facebook/radio
social interaction
motivation
Kat
Stage 4
Age 22
School leaver
Objects
BNF
rote learning
Spider's web
approach - connecting threads = understanding
Bath
Eureka moment
Emily
Stage 4
Age 21
School leaver
Objects
sticky pads
study technique (organisation)
photo (family)
motivation
coffee cup
social interaction
caffeine
Helen
Stage 4
Age 28
Arts & humanities degree
Objects
USB stick
elearning
diary/assessment plan
study technique (organisation)
results letter
achievement

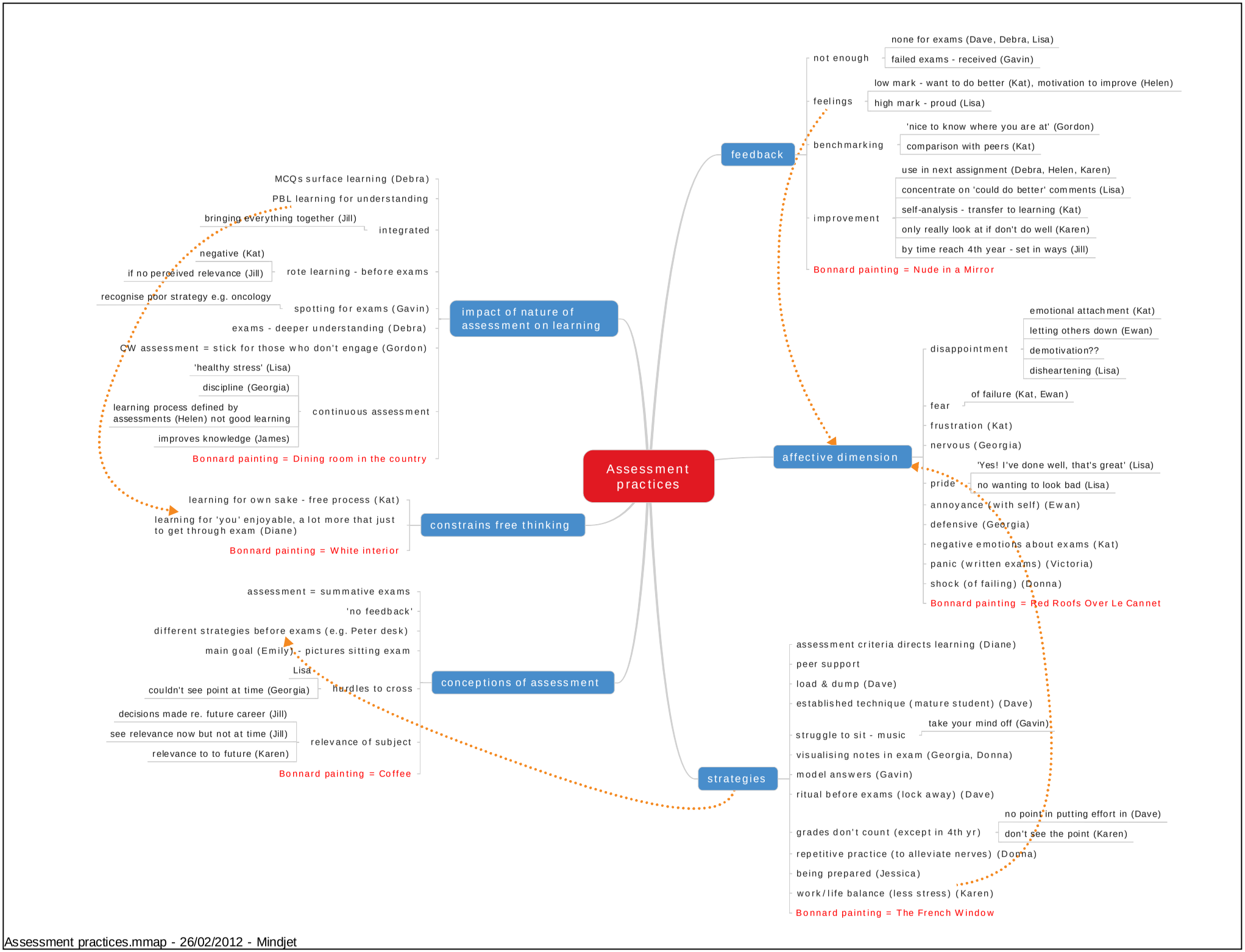
Appendix VIII. Objects – analysis

Mind map showing analysis of objects brought by participants (Chapter 4).


Objects
ways of learning
being interested in something
cosmos book
eureka moment
bath
making connections
spider's web
helps understanding
action/body language
elearning
tutor support
USB stick/hard drive (2)
rituals
nuts
polos
green pen
stress man
finances
coffee (4)
calculator
motivation
family photos (5)
social interaction/peer support
Facebook
mobile phone
friends photos
rugby ball/drink
previous achievements
achievements folder
results letter
the future
wallet
achievement/ part of organisation
RSC membership card
study techniques/ strategies
revision techniques
coloured pens (6)
post it notes
mind maps (4)
summary/templates (2)
planning tools
assessment criteria
diary/assessment plan (2)
only use for exams
desk
ear plugs
library silent study area
music
CD/radio
association with subjects
use while studying
iPod (3)
motivation/feel good
song
pharmacy knowledge
BNF (symbolic?)
rote learning
summarised information

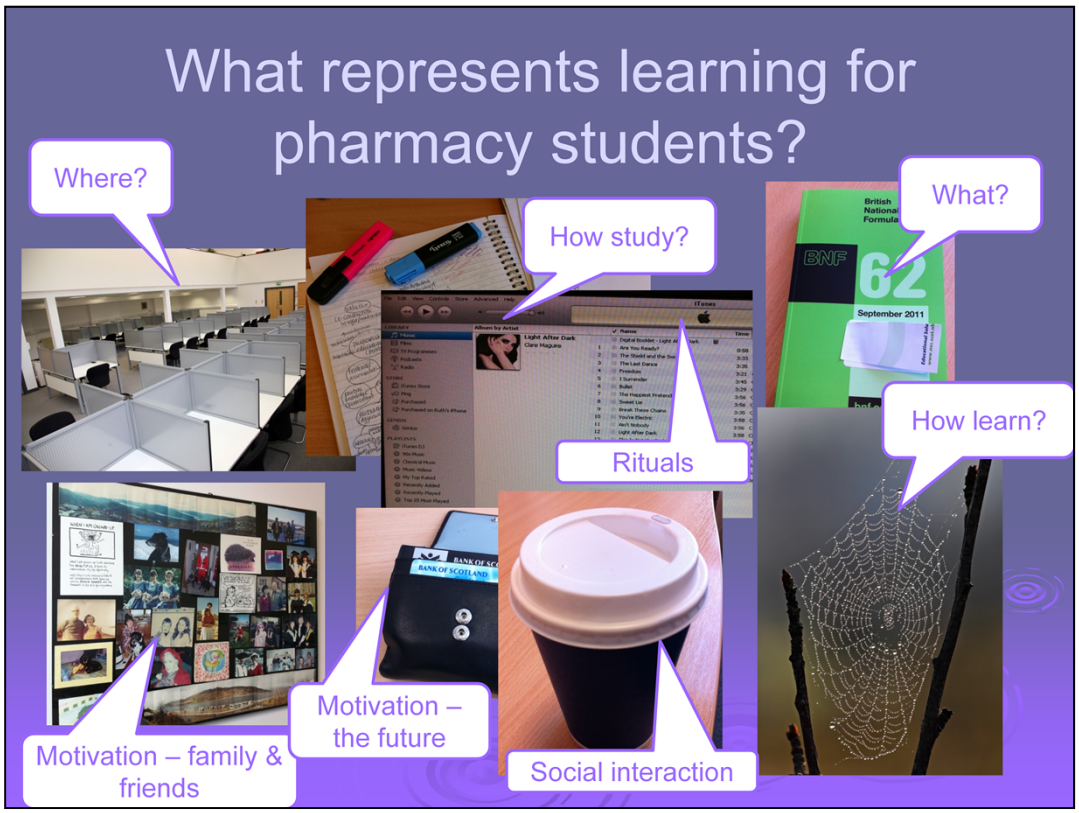
Appendix IX. Assessment practices – analysis

Mind map showing analysis of participants' assessment practices (Chapter 5).


Assessment practices
feedback
not enough
none for exams (Dave, Debra, Lisa)
failed exams - received (Gavin)
feelings
low mark - want to do better (Kat), motivation to improve (Helen)
high mark - proud (Lisa)
benchmarking
'nice to know where you are at' (Gordon)
comparison with peers (Kat)
improvement
use in next assignment (Debra, Helen, Karen)
concentrate on 'could do better' comments (Lisa)
self-analysis - transfer to learning (Kat)
only really look at if don't do well (Karen)
by time reach 4th year - set in ways (Jill)
Bonnard painting = Nude in a Mirror
impact of nature of assessment on learning
MCQs surface learning (Debra)
PBL learning for understanding
integrated
bringing everything together (Jill)
rote learning - before exams
negative (Kat)
if no perceived relevance (Jill)
spotting for exams (Gavin)
recognise poor strategy e.g. oncology
exams - deeper understanding (Debra)
CW assessment = stick for those who don't engage (Gordon)
continuous assessment
'healthy stress' (Lisa)
discipline (Georgia)
learning process defined by assessments (Helen) not good learning
improves knowledge (James)
Bonnard painting = Dining room in the country
constrains free thinking
learning for own sake - free process (Kat)
learning for 'you' enjoyable, a lot more that just to get through exam (Diane)
Bonnard painting = White interior
conceptions of assessment
assessment = summative exams
'no feedback'
different strategies before exams (e.g. Peter desk)
main goal (Emily) - pictures sitting exam
hurdles to cross
Lisa
couldn't see point at time (Georgia)
relevance of subject
decisions made re. future career (Jill)
see relevance now but not at time (Jill)
relevance to to future (Karen)
Bonnard painting = Coffee
affective dimension
disappointment
emotional attachment (Kat)
letting others down (Ewan)
demotivation??
disheartening (Lisa)
fear
of failure (Kat, Ewan)
frustration (Kat)
nervous (Georgia)
pride
'Yes! I've done well, that's great' (Lisa)
no wanting to look bad (Lisa)
annoyance (with self) (Ewan)
defensive (Georgia)
negative emotions about exams (Kat)
panic (written exams) (Victoria)
shock (of failing) (Donna)
Bonnard painting = Red Roofs Over Le Cannet
strategies
assessment criteria directs learning (Diane)
peer support
load & dump (Dave)
established technique (mature student) (Dave)
struggle to sit - music
take your mind off (Gavin)
visualising notes in exam (Georgia, Donna)
model answers (Gavin)
ritual before exams (lock away) (Dave)
grades don't count (except in 4th yr)
no point in putting effort in (Dave)
don't see the point (Karen)
repetitive practice (to alleviate nerves) (Donna)
being prepared (Jessica)
work/life balance (less stress) (Karen)
Bonnard painting = The French Window

Appendix X. Slide from Stage 1 MPharm lecture

Slide from Stage 1 MPharm lecture showing some of the artefacts that pharmacy students use to represent learning.


What represents learning for pharmacy students?
Where?
How study?
What?
Rituals
How learn?
Motivation – family & friends
Motivation – the future
Social interaction
BNF
62
September 2011

Appendix XI. Published output

- EDWARDS, R.M., 2011. Policy and professionalism in pharmacy education. *Pharmacy Education,* 11 (1) pp. 209 – 211

- TONNA, A.P., EDWARDS, R.M., 2013. Is there a place for qualitative research methods in pharmacy practice? *Eur J Hosp Pharm*. 20, pp. 97-99.

Pharmacy Education, 2011; 11 (1): 209 - 211

Policy and Professionalism in Pharmacy Education

MRS. RUTH EDWARDS

School of Pharmacy & Life Sciences, Robert Gordon University, Schoolhill, Aberdeen, AB10 1FR. Tel: + 44 (0)1224 262516; Fax: +44 (0)1224 262555. Email: r.edwards@rgu.ac.uk

Abstract

Pharmacy as a profession in the United Kingdom (UK) is on a path of significant change with legislative and policy changes to practice happening or on the horizon. The UK government review of the regulation of health professionals will have a major impact on the profession of pharmacy and thus on the education of pharmacists. For many pharmacy academics there is also an interesting dual professional identify; academics have an occupational identity from being a teacher but their identity as a subject specialist comes from their professional background. This essay will explore the impact of policy and professionalism on these dual identities in the context of pharmacy higher education.

Keywords: *Higher education, pharmacy, policy, professionalism*

Professionalism in Pharmacy Education

> *"Professionals must have an acute understanding of the political, social and ethical implications of the impact of their practice, and of changes to it: and this must be built into both their practice and their training"* (Bottery, 1998 p.171).

Pharmacy as a profession is on a path of significant change with legislative and policy changes happening or on the horizon. The United Kingdom (UK) government White Paper 'Trust, Assurance and Safety – The Regulation of Health Professionals in the 21st Century' (Department of Health, 2007a) and the subsequent Darzi Review (Department of Health, 2007b) have had a major impact on the profession of pharmacy and thus on the education of pharmacists. For many pharmacy academics there is also a dual professional identify (Piper 1994, cited in Nixon, Marks, Rowland, & Walker, 2001); academics have an occupational identity from teaching but their subject specialist identity comes from their professional background. This essay will explore the impact of policy and professionalism on these dual identities in the context of pharmacy higher education (HE).

Professionalism in Pharmacy

The classic theory of professions, based on Talcott Parson's approach, views professions as fulfilling useful and necessary social functions centering on the professions role in the structure of modern society (Morgall Traulsen & Bissell, 2004). Pharmacy possesses many of the classic functional traits; a monopoly of practice, specialist knowledge, a lengthy period of training, an obligation of service and professional conduct that is regulated by the profession, however many have argued that pharmacy is not a true profession (Morgall Traulsen & Bissell, 2004). Other authors have challenged this argument. Dingwall and Wilson (1995 cited in Morgall Traulsen & Bissell 2004) and Harding and Taylor (1997) argue that despite the commercial setting, pharmacy can still achieve professional status and that professional altruism and commercial interests are not necessarily in conflict.

Critical perspectives on professions emerged in the 1960s with the focus on the power balance between professionals and their service users. The 'splendid isolation', that critical sociologists argued was a characteristic of professions, has been widely debated in the context of health professions in the wake of highly publicised incidents such as high mortality associated with children's heart surgery at the Bristol Royal Infirmary (Bristol Royal Infirmary Inquiry, 2001) and the activities of general practitioner and serial killer Harold Shipman. The report of the Bristol Royal Infirmary Inquiry (Bristol Royal Infirmary Inquiry, 2001) was critical of regulation of the professionals involved and of the medical professionals' lack of communication with parents and with other professionals. Bottery (1998) describes a type of professional who sees themselves as master of the situation and who adopts a manipulative strategy which allows no real dialogue with the client. In Bristol, as a result of this lack of communication, "*mistrust* [was] *born* [and].. *cries for the curtailment of professional power and autonomy"* (ibid p. 169) came in the form of government intervention. This, along with other incidents and the Shipman Inquiry (The Shipman Inquiry, 2004) contributed to the UK government responding with a wholesale review of professional regulation culminating in the White Paper (Department of Health 2007a) which resulted in specific structural changes for pharmacy. The Royal Pharmaceutical Society of Great Britain (RPSGB) was required to separate its regulatory system from professional and clinical leadership, allowing each function to focus solely on its core role. In September 2010, the General Pharmaceutical Council (GPhC) took over as the new regulator for pharmacy and the Royal Pharmaceutical Society of Great Britain (RPS) transformed into the new professional leadership body (News Team, 2010).

Emerging from the critical perspectives on professionalism, the 'deprofessionalisation' theoretical approach became debated in the 1980s. Morgall Traulsen and Bissell (2004) describe Haug's argument that a narrowing of the 'knowledge gap' between the general public and the professional is influenced by societal trends towards egalitarianism and the higher level of education of the general public. These arguments have been explored further by Hibbert et al. (2002)

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who found consumers had a high perception of their own expertise in over-the-counter medicines and they assert that pharmacists need to be mindful of the antagonism between the knowledgeable consumer and themselves during the ongoing process of re-negotiating their professional role with consumers. Pharmacists may increasingly need to *"move to being the expert in empowering clients to solve problems themselves, when they arise"* (Bottery 1998 p. 164) rather than being seen as the expert-professional in medicines.

Denzin and Metlin (1966 cited in Morgall Traulsen & Bissell 2004) have argued that lack of control over the social object of its practice (the drug) relying on the prescribing authority of the doctor means that pharmacy can not be a true profession. Harding and Taylor (1997) describe how Dingwall and Wilson have criticised Denzin and Metlin for a failure to "*distinguish the difference between the drug as a material object and 'the-drug-as-a-basis-for social action'"* (ibid p. 554). Harding and Taylor take this criticism further by arguing that the social object of pharmacy is the symbolic transformation of a drug into a medicine and a pharmacists' role is to "*inscribe prescribed, or purchased drugs with a particular meaning for the user"* (ibid p. 554).

The changing nature of the generation of knowledge about the use of medicines, may mean that the pharmacist can no longer be seen as the 'gatekeeper' of knowledge about medicines but needs to empower the patient, in the ethos of Bottery's (1998) 'humanistic education', to find their own meaning in their medicine use.

Pharmacists are taking on new extended roles and undoubtedly pharmacy is a profession undergoing considerable change with many external and internal influences on the nature and conceptions of professional practice. As the nature of pharmacists responsibilities change, so the nature of specialist knowledge needs to change and therefore the education of pharmacists needs to adapt. Pharmacy education has traditionally been based in the natural sciences and within a technical paradigm. However an increasing emphasis on clinical skills and pharmaceutical care along with increased need for inter-professional working and consultation skills have required a reorientation of approach to education. Other authors have explored one impact of this; changes in the pharmacy academic workforce and a shortage of academic pharmacists (Bates, Harding & Taylor, 2004; Sosabowski & Gard, 2008). In the UK the GPhC has responded to the reorientation of approach with new educational standards for initial education and training of pharmacists with a more outcome-focused approach than previously (News Team, 2011; General Pharmaceutical Council, 2011) and discussions are ongoing about a potential move to a 5-year integrated curriculum (Mistry, 2011; Smith & Darracott, 2011). This reorientation of approach and subsequent new standards for curriculum design, have dramatically changed the professional landscape for pharmacy educators in the UK.

Professionalism in Higher Education

Societal changes that impact on pharmacy also impact on HE, however there are additional issues which affect this area of practice. Nixon et al. (2001) discuss *"new educational landscapes"* (ibid p. 229) or complex overlapping changes that are affecting HE; the student body has grown in size and become less homogeneous over the last four decades and HE has had to respond with changes in curriculum, teaching and assessment. The authors also highlight changing conditions of academic work and the impact of decline in the real value of academic salaries; a particular issue for many academic pharmacists. The national review of pay structures and role evaluation in UK HE also compounded a feeling of unrest and dissatisfaction with working conditions and the global economic crisis and its impact on HE funding has created a much less certain future for those working in HE.

Nixon et al. (2001) also highlighted changing structures of accountability and accreditation. With the inception of Quality Assurance Agency for Higher Education and the drive for accountability and quality control, the authors argue that these are *"attempts to corral academic professionalism within the parameters of outcome statements and competence thresholds"* (ibid p. 231) and that *"the impact of this culture on individuals and relationships is considered by many academic workers to be deeply alienating"* (ibid p. 231). The impact of these changes on professionalism, the authors argue, has contributed to a crisis of professional identity in university teachers.

There is also an increased demand on academics to become research active many of whom, in newer universities where many UK Schools of Pharmacy are situated, started as non-researcher lecturers. Sikes (2006) argues that not only do these demands lead to increased workloads, but they also have implications for professional and personal identities, and consequently, for how people feel about and how they conduct their work.

Naidoo and Jamieson (2005) explored the impact of student consumerism in HE. Alongside a societal move towards consumerism, New Labour Government influences on HE created 'consumerist mechanisms' which, they argue, could *"change popular understanding of the aims and nature of education"* (ibid p. 268) and have an effect on *"key constituent elements of HE including the professional identities of academics"* (ibid p. 269). Students of the current generation often demand 'value for money' in their studies in a way that previous generations would never have considered. In England and Wales, the introduction of student tuition fees in has only compounded this. Twenge (2009), in discussing teaching 'Generation Me', describes an increasing sense of entitlement in the current generation of students; more expect to get good grades for 'trying' or 'working hard'. She goes on to argue that the first step in educators teaching the current generation of students better is to *'understand it's perspectives and realise that they are reflections of contemporary culture'* (ibid p. 404). This growing culture of entitlement, Naidoo and Jamieson (2005) argue, distorts pedagogic relations and has an impact both on academic perceptions of professionalism and on the student learning process.

Conclusion

In this changing professional and academic environment, there are significant challenges for those involved in educating the future generations of pharmacists. In meeting these challenges, it is important for pharmacy academics to develop an awareness of the '*political, social and ethical implications of the impact of their practice, and of changes to*

it' (Bottery, 1998 p.171). They need an awareness of the policy context of their practice (both professional and educational) and an understanding of the current student population, especially the issues that impact on their learning. The increasing emphasis on clinical skills and work-based learning form a major part of pharmacy education in the UK as do the development of professional values and attitudes. Pharmacist academics have a key role to play in this as role models (Schafheutle, Hassell, Ashcroft, Hall & Harrison, 2010) and therefore require a strong sense of personal professional identity including confidence in the 'educator' aspect of this. Significant changes are ahead for UK pharmacy education and issues of policy and professionalism will continue to impact on the sector for the foreseeable future therefore pharmacy academics need to take account of these to ensure the successful education of future pharmacists.

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ORIGINAL ARTICLE

Is there a place for qualitative research methods in pharmacy practice?

Antonella P Tonna, Ruth M Edwards

School of Pharmacy and Life Sciences, Robert Gordon University, Aberdeen, UK

Correspondence to
Dr Antonella P Tonna, School of Pharmacy and Life Sciences, Robert Gordon University, Aberdeen AB10 1FR, UK; a.tonna@rgu.ac.uk

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ABSTRACT
Over the past years, there has been an increase in the use of qualitative methods in the medical literature. In this paper, we will attempt to put forward our experiences with use of these methods in research that we have conducted.

Qualitative research has its origins in the social science disciplines, including anthropology, sociology, psychology and educational theory, and historically has struggled to gain credibility in the medical literature often because of concerns about robustness of the study design and the differences in structure for presenting the findings. Over the past 10 years, however, there has been an increase in the use of qualitative research methods (which may include interviews, focus groups and case studies) in the medical literature. Examples in the literature where use of qualitative methods has added to the body of evidence include use to inform practise following a change in legislation to allow for pharmacist prescribing (PP);[1–3] to gain an understanding of consumer needs;[4] and to explore patients' preferences relating to specific treatments.[5]

With a growing emphasis on person-centred healthcare, there is increasing recognition of the richness of information that may be drawn from a qualitative approach to answering a research question. Holloway has put this very succinctly:

> Qualitative research is a form of social inquiry that focuses on the way people interpret and make sense of their experiences and the world in which they live. A number of different approaches exist within the wider framework of this type of research, but most of these have the same aim: to understand the social reality of individuals, groups and cultures. Researchers use qualitative approaches to explore the behaviour, perspectives and experiences of the people they study.[6]

In our opinion, the types of research questions that can be answered using qualitative methods would include:

- areas where there is a lack of evidence; qualitative methods may be used as an initial exploration to inform further research;
- studies to explore views, perceptions and experiences;
- studies to gain an in-depth knowledge of why individuals are behaving in a particular way.

As part of this paper, we will share with you some experiences of our use of qualitative methods in our own areas of practice. Both of us are currently pharmacy academics with a mixed hospital and community pharmacy background. Over the years, our training, including postgraduate education, has emphasised and mainly revolved around quantitative research methods resulting in a 'black or white' approach towards the literature. We were both novices when it came to qualitative research and embarked on our doctorate projects with a degree of trepidation. In this paper we aim to try and illustrate our experiences in the application of qualitative methods in our research and how we feel this has helped us develop as researchers to help others starting out on this process.

One of our research projects (AT) has centred on PP in Scotland, with a focus on antimicrobials.[7] When embarking on the literature search, it was apparent that there was a paucity of data available on PP, but more so, on the implementation of PP. No studies had explored use of pharmacist prescribers within a speciality. The originally planned method of applying a cross-sectional questionnaire survey to measure pharmacists' views and attitudes to PP of antimicrobials in secondary care was therefore discarded. There was little information around the topic in the literature to inform a questionnaire. This led to a focus on a more exploratory approach to the research and a series of focus group discussions were carried out aiming to explore pharmacists' views and perceptions of PP in secondary care with a focus on antimicrobials. The experience was a steep learning curve since it was apparent from the start that focus groups are very complex to organise from an administrative point of view! Finding a suitable time for a group of busy hospital pharmacists to meet, ensuring that all recording equipment was in good working order and travelling to the venue in adverse weather conditions were only some of the challenges faced. However, it was apparent, even at the time of facilitation, that the richness of data and the strength of opinions expressed that were captured would not have been possible using a questionnaire.[7] Another challenge to overcome was producing the ad verbatim transcript which was the raw data for analysis. Having pharmacists talking over each other during discussions, each using their own broad Scottish accent, was definitely not an easy job for a non-Scottish native! However, the whole process helped the researcher with immersion in the data and then facilitation of the analysis.

The other of our doctoral research projects (RE) was educational in focus and involved exploring pharmacy students' experiences of learning during individual face-to-face interviews with 'a loose

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agenda of questions'.[8] The study involved students selecting three artefacts which represented learning for them and these were used to focus the discussions. In conducting the interview, openness to changing the sequence of themes was applied and additional probing questions were used in response to the 'stories' told by the participants.[9]

There were a number of challenges in designing and conducting this research. One ethical issue involved the 'power' relationship between the researcher and participants as lecturer/student. This often exists whether the participants are students, patients or colleagues and it is important for the researcher to take account of this relationship when collecting and analysing the data. DiCicco-Bloom and Crabtree argue that social roles shape the interview process and that acknowledging and responding to the power differentials that exist requires reflexivity on the part of the researcher.[10] In this study, the interviews were conducted in a 'neutral space' and there was assurance given that the decision of whether or not to participate would not alter participants' 'right to or quality of service'[11] that they would otherwise receive. That is, declining to participate would not affect the researcher's relationship with them as a lecturer. The use of the artefacts in this study helped shift the balance of power in the interview, allowing participants 'to select the episodes or situations he or she wants to recount'.[12]

In addition to ethical issues, another major challenge was considering and deciding on the theoretical perspectives underpinning the research. As an inexperienced qualitative researcher, this was something which I had never considered before. Ringsted *et al*[13] argue that the first step in generating a researchable problem is situating the idea within a conceptual theoretical framework and this is a step that quantitative researchers often omit. Ringsted *et al*[13] go on to explain that this conceptual framework incorporates

> theories … that can clarify the underlying mechanisms pertaining to the idea or problem; a critical synthesis of information from the empirical literature identifying what is already known and what is not known about the idea to inform the development of a concrete research topic; and the researcher's individual thoughts and ideas.

Reeves *et al* present a useful introduction to three common theories that can underpin qualitative research and explain why these are 'important for clinicians, for health policy, and for patient care'.[14] This process of finding a conceptual framework, although difficult, increased the credibility and rigour of the research in this study.

There has been much criticism in the literature about the robustness and rigour of qualitative research. This has led to a number of toolkits and guides being developed, some of which are suggested for further reading in box 1. Our opinion, based on the research projects discussed and on the literature, is that analysis of raw data based on qualitative methods is time consuming but satisfying and potentially involves more steps than a quantitative project. For example, focus group transcripts in the project described above (AT) were initially coded into themes and input into the software package NVIVO to facilitate data management. A more detailed qualitative analysis followed for which the framework method[15] was used as a tool to aid in the analytic process. AT initially read and reviewed all transcripts and developed themes. To enhance the validity of the findings, each transcript was independently reviewed for emerging themes by one of the other researchers.[7] In the case of the second project (RE), mind-mapping software was used to analyse the data.[16]

Box 1 Further reading on analysis and quality of qualitative research

- *Critical Appraisal Skills Programme: 10 Questions to Help You Make Sense of Qualitative Research*. Milton Keyes Primary Care Trust, 2002.http://www.casp-uk.net/wp-content/uploads/2011/11/CASP_Qualitative_Appraisal_Checklist_14oct10.pdf(accessed 12 Dec 2012).
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On reflection, we cannot claim to be seasoned qualitative researchers; however, these experiences have helped us to have a better understanding of what qualitative methods involve and the richness of information they provide. Though pharmacy is traditionally a quantitative discipline, we share Hammersley's view that

> 'which of these approaches [quantitative or qualitative] is most appropriate should depend on our purposes, and the stage that our research has reached, not on paradigmatic commitments'.[17]

We would encourage all readers to dip their fingers into the world of qualitative research. Not all research questions may be appropriately addressed through the 'gold standard' of a randomised controlled trial, for example, finding reasons for patients non-adherence or understanding the meaning and impact of drug therapy on a patient's life. Gaining insight into patient knowledge, understanding, views and perceptions on care are paramount to our practice and may be a potential starting point for us as pharmacists, to think of ways of improving our service delivery.

Key message

This paper describes our experiences conducting research using qualitative methods.

Contributors All authors have contributed to this commentary equally sharing our experiences in qualitative methods.

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