Exploring learning conceptions in a culturally diverse post-graduate science classroom

Karen Elizabeth Thomson

Thesis submitted for the degree of

Doctor of Education

Education Studies, Faculty of Social Sciences
University of Stirling
March 2017

Declaration

I declare that I have composed this thesis myself and that it embodies the results of my own research. Where appropriate, I have acknowledged the nature and extent of work carried out in collaboration with others included in the thesis.

Karen Thomson

Copyright

Abstract

This research explored the learning conceptions of a culturally diverse population of post-graduate health and life sciences students at a Scottish university; and investigated the relationship between their learning conceptions and academic achievement. There is a vast literature on conceptions of learning deriving from a variety of disciplines, although few studies have addressed the conceptions of experienced learners. A mixed methods approach was implemented, which is underpinned by a phenomenographic methodology. The participants comprised individuals from thirty-two nations, which were broken down into five cultural clusters. Quantitative data were gathered from 156 students, using the Conceptions of Learning Inventory (COLI) (Purdie & Hattie, 2002) and their predicted, and actual, academic performance at the end of their first semester. Three focus groups further explored students' understanding, and experiences, of learning and assessment.

There were some cultural differences in conceptions of learning identified in this study; generally, students from Central Africa scored most learning conceptions higher than students from other cultural clusters. There were no learning conceptions that predicted academic achievement with this group of post-graduate health and life sciences students, although there was a relationship between predicted academic performance and 'personal development' and 'broadening horizons'. Possible explanations for these outcomes are presented. Contrary to previous research, predicted academic performance was not correlated with academic achievement. There were no cultural differences in academic achievement, but more students from Central Africa predicted that they would perform well than students from other cultural clusters. There is some support for learning conceptions sitting in a nested hierarchy, as found by previous research, but this study cannot confirm the exact order of these learning conceptions.

In light of these findings, suggestions for future research are considered, with an emphasis on the relationship between learning context and conceptions of learning; and longitudinal research focusing on the development of learning conceptions. Implications of the outcomes from this study for university learning and teaching, as well as international and staff development policies, are presented.

Acknowledgements

First and foremost, I wish to thank all of the participants who gave their time to this study; without them it would not have been possible. I am indebted to my supervisor, Professor Richard Edwards, for his patience, guidance and support, and for the manner in which he ungrudgingly imparted his knowledge. Thanks to all of my colleagues, particularly Jacqui and Kerri, who allowed me the time, advised me and listened.

I am extremely grateful to my mother, who looked after me so lovingly for days on end as I retreated to her comforting home to write; her home-cooking and stories kept me going. Dad and Mary, I thoroughly appreciate the wine and dinners and for never asking me any difficult questions about my research.

Finally, I would like to thank my husband, Iain, for always believing in me and patiently waiting for seven long years for me to 'bring this thesis home'; and our beautiful children, Jodie and Ben for constantly reminding that there is a world outside a Doctorate.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

Higher education has witnessed unparalleled changes over last the few decades. The broad social, economic, and technological forces that shape the realities of the 21st century have had a major effect on universities worldwide. This includes advanced information technology, new ways of thinking about financing higher education and a need to address market forces and commercialisation, extraordinary mobility for students and academics, the global spread of common ideas about science and scholarship, and the role of English as the main international language of science. Most significantly, the idea of mass access to higher education has meant unprecedented expansion of higher education in the developed world and higher education is playing a critical role in the economic development of emerging economies. Higher education institutions (HEIs) in the United Kingdom (UK) are continually adapting their policies and practices to address the implications of such changes for the student learning experience.

The focus of this research examines students' learning conceptions in the context of a culturally diverse taught post-graduate (TPG) suite of health and life sciences programmes at a Scottish university. It explores the students' understanding and experiences of learning and the relationship between their learning conceptions and their perceived and actual academic performance using a mixed methods design. Academic publications in learning strategies and styles have often resulted in confusion and a poor relationship between policy and practice in the classroom; this can partly be attributed to the multidisciplinary nature of research in this field. Learning styles, in the context of this thesis, can be described as the scope of competing and contested theories that propose to explain the manner in which students learn.

This thesis attempts to evaluate the extensive literature and will make a significant contribution by acknowledging the role of master's students, as experienced learners, learning conceptions in culturally diverse science classrooms.

1.1 Introduction to Chapter 1

This chapter will lay the foundations for the thesis, and it will provide a basic outline of the topic studied. However, the aims and objectives will be documented in detail

following the literature review in Chapter 2 (section 2.4). A context for the research is provided by profiling the background of the researcher, highlighting key aspects of the higher education environment during the period prior to data collection, and considering both national and institutional policies related to managing the rapid increase in the diversity of the student population globally. The perceived gap between policy and practice is noted in this chapter, but how this research addresses this gap is discussed in more detail in the final chapter.

1.2 The purpose of the research

In the current competitive UK HE environment, in the 'battle for excellence' through university rankings, institutions are implementing measures to enhance the student experience and increase student satisfaction. There are a number of key national measures that feed into such leagues tables which ask students to rate the learning experience at their institution, but there is no coherent policy document that addresses what our students understand about learning. Universities' learning and teaching strategies in the UK frequently include phrases such as 'enhancing student learning', 'promoting lifelong learning' and 'developing independent global learners', but students' understanding of learning at university is rarely considered, as it is almost always assumed that everyone knows and shares the same meaning when using the term, learning. It is proposed that the outcomes from this research will influence institutional learning and teaching policies, feed into staff development programmes and help bridge the gap between policy and practice in the classroom.

1.3 Context

1.3.1 Background of the researcher

The researcher undertook this piece of work as it addresses a major challenge for learning and teaching in higher education as the student demographic diversifies; students' learning experience was within the remit of the researcher's role at the time the research was designed. The following section, which will be written in the first person, will outline the background of the researcher. This will, in conjunction with a summary of the external environment, provide a coherent framework for this piece of work.

As a third-year undergraduate psychology student at a UK university in the early 1990s, I participated in an international exchange programme which allowed me to study for one year in a small university in Pennsylvania, USA. At the onset of this programme, along with feelings of homesickness, I suffered from learning shock and performed very poorly in my first set of summative assessments. My previously successful approaches to studying did not align with the requirements of the American assessment procedures. Although I spent more time studying than many of my fellow students, I performed relatively poorly in the summative assessment, which led to low self-esteem and a poor belief in my own ability. Following some discussion with a supportive tutor and another international student, I adapted my strategy and went on to be successful in the subsequent courses, albeit that my initial performance contributed to, and therefore affected, my honours classification. It was this experience that made me very aware of the importance of having good learning strategies to achieve success in higher education and the value of grasping the skill of modifying learning strategies for the required assessment procedures.

On return to the UK, and after successful completion of my degree, I went on to be a tutor and then lecturer in a Department of Psychology in a post-'92 university. Most of my student-facing experience was teaching introductory psychology to student nurses and in other programmes allied to health. During this period I was always fascinated by approaches to learning and teaching methods, regularly discussing with students their preferences in teaching styles.

In 2004, I was promoted to the role of Head of Learning, Teaching and Quality for the School of Life Sciences, a role in which I continued in a variety of iterations over the succeeding ten years. During this period the University underwent a major restructure, moving from eight schools to three faculties. In 2011, post-restructure, following a competitive interview process, I was appointed to the role of Associate Dean, Learning, Teaching and Quality (AD_LTQ), responsible for the management and enhancement of learning and teaching for all the Allied Health and Nursing programmes as well as Life Sciences and Psychology. The incumbent of the AD_LTQ post was accountable for meeting a number of university key performance indicators in relation to student satisfaction, progression and completion rates, quality assurance and enhancement for home-based programmes and transnational education. I worked closely with the

Associate Dean, International, who was responsible for meeting targets for international student numbers and together we implemented strategies to enhance the experience of our international students. I was also responsible for setting up and managing a Student Learning Development Centre with a composition of six academic tutors who provide academic support to all students in the School with a particular focus on widening the recruitment of international students and those who enter the University via the Access programme. I therefore have a vested interest in the relationship between teaching, assessment and deeper levels of conceptual understanding which, in my experience, and supported by the academic literature (for a detailed review see Richardson, Abraham, & Bond, 2012), is directly related to student satisfaction and success. Throughout this period I continued teaching on a variety of different courses in the Department of Psychology and I was an academic adviser/personal tutor to a number of students as they undertook a degree in Psychology. Although I was working in a management post, it was extremely important to me that I retained student contact through teaching and providing academic support. This often resulted in a conflict of priorities.

My academic background and the majority of my teaching experience lies within the field of social psychology. In my role as AD_LTQ I had an overall vision regarding the teaching strategies used by academic staff in their classrooms. During this period there was much pressure for staff to embed innovative technologies into their teaching practices and to move away from the didactic traditional lectures towards student-centred, problem-based learning. The literature (e.g. Barkley, 2010) tells us that student engagement is one of the principal factors for effective teaching and students are more likely to engage if the learning is interactive. By organising an annual internal conference for academics within the School to share teaching practices and discuss concerns regarding student learning, and through monitoring student feedback on their courses, I gained much insight into how colleagues supported student learning. An overview of teaching practices in the School of Health and Life Sciences, coupled with my own experience as a student, fed my academic interest in students' understanding of learning, their approaches to studying, and how this affected their academic performance.

To address the predicted Scottish Funding Council's real-term funding cuts, the last decade has witnessed an increased focus on the University's international strategy for a

sustainable income stream. The strategy sets informed targets for subject areas to increase global student recruitment. Subsequent to some intense market research in 2008/09, the School of Life Sciences developed a number of taught master's programmes to meet the perceived demand in India, Saudi Arabia and Myanmar. The following year, the School successfully recruited a number of international students from the target countries. This was the first time that international students outnumbered home students in any programme in the University. The diverse learning styles, perceived and real, adopted by this new demographic of students caused much concern for the teaching staff, who had little experience of teaching culturally diverse students. In my role I was overseeing student pass rates, the levels of student satisfaction of international students (measured by the International Student Barometer), while ensuring that the new programmes met the required quality indicators and subject benchmark statements for master's teaching in the Sciences. During the initial years of the programmes it became quite obvious that academic staff would require much support and development to help adjust their teaching practices to meet the needs of the new student demographic, while maintaining all the required key performance indicators for the University.

The lack of groundwork with regards to culturally diverse students' learning needs resulted in a detrimental view of international students, not just in my own institution, but this was a national phenomenon which was beginning to be addressed in the literature (Jones & Brown, 2007; Ryan & Carroll, 2005a). As Head of Learning, Teaching and Quality, I was involved in a number of national networks (e.g. the Higher Education Leadership Foundation, and the Quality Assurance Agency's Quality Enhancement Themes Steering Committee) with whom I explored how other institutions were addressing staff development regarding the rapid influx of international students. Other than a number of experienced staff sharing their knowledge and skills, there were no national policies or practices that could be adopted to support academic staff teaching culturally diverse Master of Science students.

It is within this context that I registered for a Doctorate in Education (EdD) in 2010; my motivation to conduct research which would feed into national and local university policy sat more comfortably in an EdD framework than a PhD. As part of the first module, I undertook a literature review exploring learning styles in multi-cultural

classrooms. During this assignment I became very aware of the methodological problems associated with cross-cultural research (see Chapter 3, section 3.4). The vast majority of respectable publications exploring learning in different cultures are undertaken by culturally diverse research teams. There is a fairly extensive literature around the learning styles and strategies of Chinese students studying in Australian Business Faculties, authored by Chinese academics located in China, Hong Kong and Australia, working with Australian academics (e.g. Pratt, 1992; Watkins & Biggs, 1996, Marton, Dall'Alba, & Tse, 1992). I have travelled in India, Sri Lanka and fairly extensively in much of South East Asia, both for pleasure and as part of the recruitment drive for the aforementioned programmes, but have no experience of Chinese, Middle Eastern or African cultures. This caused me some concern as the interpretation of a culture is necessarily biased and subjective. When we explore meaning in another culture, we bring with us our previous experiences, preconceptions, and ideas. These presumptions are more diverse in a multicultural research team; a single researcher working with a culturally diverse population is unable to benefit from the multiplicity of a research team or the uniformity of a homogenous sample.

Having completed the taught element of the EdD programme, I commenced the research phase. Due to the intensity of my then role, I made a decision to step down from a management post to senior lecturer, which allowed me time and space to manage the research and increase my student-facing role. Getting back into the classroom was a welcome transformation. It allowed me to better understand the issues that teaching staff face and to personally experience teaching the rapidly diversifying student body. I was in a unique position insofar as I was able to understand the rationale for local learning and teaching policy and was now witnessing the barriers to implementation first-hand, allowing me a deeper understanding of the, often weak, relationship between policy and practice. It was during this period that I immersed myself in the learning literature, untangling learning styles from learning strategies and approaches to learning. I observed that many of the papers published in the field of learning in higher education derive from academics outwith Departments of Education. Such researchers are often conducting studies to enhance their development in teaching practice or to investigate a particular phenomenon in their classroom. This results in a lack of theoretical framework underpinning their research and one-dimensional resolutions to multifaceted questions.

During the planning phase of this research, I became very aware that the local environment changes rapidly in any institution and the School's objectives that were originally set to meet our international strategy after the university restructure in 2011 had changed significantly. This resulted in a modification of my original proposal which aimed to compare approaches to learning in three distinct countries, the original target areas of the Life Sciences Masters' programmes. My background and the local environment played a significant role in determining the topic to be studied, but this cannot be set without reporting on the national and global context of higher education during this period.

1.3.2 The external environment: massification and globalisation of higher education

An academic transformation has taken place in universities in the past half-century, marked by changes unprecedented in scope and diversity. The expansion of the HE sector in the UK over the last two decades was designed to meet the political aspirations of the successive governments and popular demand for participation in the sector (the Widening Participation Agenda). During the period 2003–04 to 2011–12, the total number of higher education students at higher education institutions (HEIs) in the UK increased by almost 300,000, or 13.5% (Universities UK, 2014a). In 2003–04, non-EU students made up 8.6% of all students; by 2011–12 this had risen to 12.1%. The phenomenon of HE expansion is evident globally. The United States was the first country to achieve mass higher education, with 40% of the age cohort attending post-secondary education in 1960. While some developing countries still educate fewer than 10% of the age group, almost all countries have dramatically increased their participation rates. Western Europe and Japan experienced rapid growth in the 1980s, followed by the developed countries of East Asia and Latin American countries. China and India, currently the world's largest and third-largest academic systems, respectively, have been growing rapidly and are predicted to do so for the foreseeable future.

The trend of massification, a term introduced by Scott (1995) to describe the rapid increase in student numbers over the last two decades, has challenged the traditional form of universities as a centre of education for the privileged minority. The benefits of a mass higher education system are well documented, that is to say, improved health, empowerment, and economic and social development (Bloom, Canning, & Chan, 2006; Francesca, Ana, Jérôme, & Frits, 2011; Psacharopoulos & Patrinos, 2002). However,

this trend does not come without its challenges to the learning environment; essentially, the physical environment and teaching staff resources needed to accommodate the emergent student body. Growing class sizes have been a direct outcome of massification. The negative effects of large classes are well documented (Cuseo, 2007; Ehrenberg, Brewer, Gamoran, & Willms, 2001; Mulryan-Kyne, 2010). Larger classes tend to reinforce teaching styles that promote memorisation and reproduction of facts (Exeter, Ameratunga, Ratima, Morton, Dickson, Hsu, & Jackson, 2010) rather than the critical thinking and problem-solving skills that are considered key graduate attributes in the 21st century. This is further compounded by Mulryan-Kyne (2010), who found a reduction in student motivation, poorer engagement with the material and less commitment in larger classes. The trend of massification in conjunction with the current resource restraints do not look set to reverse in the near future. Universities therefore need to adjust their practices to ensure that they meet pedagogical requirements for good quality higher education.

The growth in numbers is most evident for undergraduate students. However, between 2002/03 and 2011/12 there was a 25% increase in post-graduate student numbers in the UK (Universities UK, 2014b), although this has dropped slightly in the past couple of years. Taught post-graduate (TPG) programmes in the UK are popular internationally from the perspective of curriculum, as compared with its European, Australian and US counterparts, and the UK taught masters' programmes retain a competitive edge because of their short, intensive and well-organised features (Kerry & McDermott, 2010). The vast majority of work in the field of learning, particularly learning conceptions, has been conducted with secondary school, college or undergraduate populations. This thesis is distinctive in that all of the participants in the sample have all been awarded science degrees and therefore have already successfully learned in their chosen field (for a detailed rationale for the chosen sample in this research see Chapter 3, section 3.4).

International students made up 28.2% of UK TPG programmes in 2011/12, an increase of 9% since 2003/04 (Universities UK, 2014b). Until relatively recently the majority of academics had a shared experience with their students; lecturers had once sat in a similar environment, adopted parallel learning styles and been subjected to comparable teaching and assessment methods to those that their students are now experiencing. As

suggested by Ryan and Carroll (2005b), the fairly recent development of extensive diversity in the classroom has resulted in academics not being able to identify with, or even understand, a number of their students' assumptions, thinking patterns and learning approaches. The phenomenon of mass education and global student mobility, along with other policies in post-'16 education, mean traditional university students, high-achieving British school leavers, are no longer the norm in many UK HEI classrooms. This brings a number of new challenges for both academics and students that need to be addressed before students can succeed at university. Particular student stressors include educational shock (Yamazaki, 2005) or learning shock (Schweisfurth & Gu, 2009). Educational or learning shock refers to unpleasant feelings and difficult experiences in a novel learning environment that derive from the student not knowing what is expected of him or her and not knowing how to approach the learning material. This educational or learning shock is part of the transition for many students but is likely to be intensified for international students. Delineating the particular stressors for international students is the key to ensuring that the correct support is in place.

As cited by Ryan and Carroll (2005b), a deficit view of the multicultural classroom has developed in UK HEIs. Too often, international students are seen as having poor spoken and written English, lack critical thinking skills, are unable to demonstrate independent thought, and are plagiarisers and rote learners. These same students have been highly successful in their own countries' education systems and have shown much ingenuity in attempting to further themselves by gaining a qualification abroad. If UK universities continue to maintain, or even increase, current targets for international student numbers as part of their international strategy, the existing stereotypes have to be challenged and the basic premise must be to adopt a pedagogy that is inclusive of students from all backgrounds.

1.3.3 National policies: responses to growth and internationalising of higher education

In 1996, Ulrich Teichler stated that "we might consider internationalisation of higher education as the next theme which gives rise to a new focus of both higher education policy and higher education research" (Teichler, 1996, p. 435). Internationalising higher education has been on the national agenda for well over a decade, although the Anglo-centric curriculum and UK-originated approaches to teaching are still mainstream in UK HEIs (Jones & Brown, 2007), although in the last decade we have

begun to witness some influences from other countries. Universities Scotland (2008) praised the international reputation of Scotland's universities and their export record abroad for both teaching and research, stating that "Universities in Scotland are amongst the most internationalised and therefore compete at a world class level to succeed within the new environment" (p. 1).

Proportionally, UK universities host the second-highest number of international students in the world, making a significant contribution the fiscal health of the higher education sector and to the British economy for both incoming students and UK higher education as an export industry. Other than the financial benefits, increasing the diversity of the student body in the UK reaps benefits from the intercultural and international interactions in universities and beyond. There is an extensive literature reporting on the economic and social benefits of international students on our campuses and of transnational education (Adnett, 2010; Bolsmann & Miller, 2008; Chandler, 1989; Enslin & Hedge, 2008; Vickers & Bekhradnia, 2007). The importance of international higher education to the British economy is irrefutable and is, contrary to popular belief, not a new phenomenon. Throughout the British Empire, the British government encouraged noble classes in its colonies and other countries with which it was trading to send their children to Britain to be educated. Given the history and current benefits to the UK, higher education as an export industry is remarkably absent from government policy in recent decades. Blair's Prime Minister's Initiative (BBC News, 2006) was the first contemporary national policy implemented to promote international education. However, following the increase in numbers of international students during and immediately after the Blair government, the changes made to visa requirements for prospective international students made by then Home Secretary, Theresa May, were estimated to cut numbers by 25% (Universities UK, 2014a). The current British government has declined to link policy and practice on international student issues, making it difficult for universities to resource programmes which support and encourage international students to study in the UK. There are, however, a number of European policies to address internationalising universities' activities, such as adopting student and staff exchange programmes, for example, SOCRATES, ERASMUS and LEONARDO. Most institutions have internal policies to promote transnational education, such as articulation with international universities, global

franchising, and drives for international student recruitment, for both distance learning and campus-based programmes.

At the time of this research, the most recent Higher Education White Paper for England (June, 2011), titled 'Higher Education: students at the heart of the system', outlined the move to place students at the centre of quality enhancement with a focus on high quality teaching, which will receive the same prestige as research. This requires a body of work which defines high quality teaching and informs sector and institutional policies for teaching and assessing students. Following a sector-wide consultation, the Higher Education Academy (HEA) revised the UK Professional Standards Framework (UKPSF) in 2011. The key revisions to the original framework, developed in 2006, allow teaching staff to benchmark their development and encourage institutions to promote lecturers on the basis of teaching excellence as well as research excellence. The UKPSF outlines the dimensions of professional practice within higher education teaching and learning support, supporting academics in personal development in relation to learning and teaching. The background to the development of national standards was introduced in the White Paper (2003), 'The Future of Higher Education'. In Chapter 4 of that paper, 'Teaching and learning, delivering excellence', one of the key proposals is "New national professional standards for teaching in higher education will be established as the basis of accredited training for all staff, and all new teaching staff will receive accredited training by 2006" (p. 46). The White Paper highlights the need for higher education to be "treated seriously as a profession in its own right" (p. 50). The HEA were invited to develop a set of professional standards for universities to incorporate into continual professional development (CPD) programmes for university teachers.

There has, however, been some resistance to continual professional development programmes for university teachers for a number of reasons, such as, prioritising teaching knowledge over specific discipline knowledge can be viewed as a devaluation of an academic's subject professionalism. Rewards for research activity are often greater and less ambiguous than rewards for teaching; and, as raised by McWilliam, Taylor, Thomson, Green, Maxwell, Wildy, and Simons (2002), there are concerns about the sort of knowledge that is being carried off as 'truths' in educational professional development programmes. Previous attempts at national standards for higher education

teaching, which included 24 teaching outcomes for the Institute for Learning and Teaching in Higher Education (the HEA predecessor) accreditation, received a hostile reception across the sector. So, in whose interests was this framework adopted? The rhetoric of Chapter 4 of the 2003 White Paper is very much around 'good teaching' and 'student choice'; it was the first government document to refer to students as 'customers' and encourages students to consider the quality of the institution's teaching as an important consideration in choosing a university. It was this paper that set the current standards for accessibility of public information about universities, that is to say, the number of academics who hold a teaching qualification. There is, undoubtedly, a national move to recognise universities' efforts to improve the student experience and to reward academics who focus on enhancing learning and teaching. How this is embraced by the sector is yet to be fully determined. This is particularly relevant as the cultural diversity of students in UK university classrooms is a fairly new phenomenon and the ability of universities to adapt to meet the needs of the new student body will be crucial for their global reputation.

In July 2014, the HEA published a strategic framework with the purpose of inspiring and assisting the sector in a key aspect of internationalising higher education; the internationalising higher education framework. The framework was designed as an enhancement tool, endeavouring to meet three key objectives:

- to recognise, build on, and enhance the quality and variety of internationalisation policy and practice in higher education;
- to foster collegial approaches to education, research, and partnership that transcend national and international boundaries;
- to acknowledge the on-going institutional and individual roles and responsibilities required to realise the internationalisation of higher education.

There are a number of statements within the framework which promote enhancing pedagogical policy. Although there is no clear direction on how to improve pedagogy, some examples of good practice are provided. It is too early to report on the impact of this publication, notwithstanding the future role of the HEA, which is currently under consideration due to its central funding being removed by 2017.

Quality assurance has always been high on UK university agendas with universities being ranked on the outcome of teaching quality assessments. Scotland witnessed a

move away from a quality assurance agenda to an enhancement-led framework in 2003/04 which saw the introduction of a five-year Enhancement-Led Institutional Review (ELIR). The Quality Enhancement Framework (QEF) recognises that the primary responsibility of quality of teaching rests with the universities, including their students. Student engagement in the management of quality at all levels within universities is one of the key principles of the QEF, giving much greater recognition to the student voice than previously authorised. Student satisfaction with the learning experience is key to quality enhancement. This attempt to move away from an audit culture has, according to Universities Scotland, had a positive impact on the professional practice of university teachers in Scotland's Higher Education Institutions (Universities Scotland, 2008).

'Graduates for the 21st century' was the focus of quality enhancement in Scotland between 2008 and 2011. All Scottish universities set up a team to consider their own institution's graduate attributes and collectively considered the graduate attributes needed for the 21st century; the likely needs of an increasingly diverse range of learners and how best to support students to achieve these attributes. Most institutions developed a new set of graduate attributes from which a broad set of common threads was identified: lifelong learning; research, scholarship and enquiry; employability and career development; global citizenship; communication and information literacy; and ethical, social and professional understanding (Hounsell, 2011). Universities are responsible for ensuring that their students can demonstrate graduate attributes; this is assessed within the ELIR process. If all Scottish graduates are supposed to be able to demonstrate the above graduate attributes, are our post-graduate programmes assuming their students hold such attributes? This was addressed by another quality enhancement project, Facets of Masterness (QAA Scotland, 2013). The document is one of the few discussion papers produced for Scotland's higher education system that addresses the post-graduate student experience, which is surprising, given that TPGs are a rapidly growing population.

The emphasis placed on university rankings has exploded in recent years. It can be argued that this is an inevitable result of globalisation and the drive for increased transparency and public accountability. Rankings are used to determine the status of a university, assessing the quality of its teaching and research. Global media

organisations publish a number of different league tables which are crucial to student applications; students globally want to attend the best universities. The national rating of research output and impact through the Research Assessment Exercise and, more recently, the Research Excellence Framework is fairly simple to decipher in comparison to the rating of teaching and the student learning experience. All final-year undergraduate students are encouraged to complete the National Student Survey (NSS), which feeds directly into national league tables. There are a number of other national student surveys; for international students, the International Student Barometer (ISB); and for post-graduate students, the Post-graduate Taught Experience Survey (PTES) and the Post-graduate Research Experience Survey (PRES), which are not yet compulsory for universities to engage. However, it inevitable as the post-graduate population increases that more emphasis will be placed on their students' learning experience. While university rankings have occupied the attention of prospective students and university management, this has not been without challenge by the academic community. There is an extensive literature highlighting the methodological concerns and theoretical understanding associated with league tables.

The QEF's emphasis on student engagement, students' increased financial investment in their education and the role of key performance indicators such as the NSS, and progression and retention figures have resulted in greater emphasis being placed on student choice and rhetoric around continual improvement of the student experience in higher education. This transformation of power from universities to current and prospective students, both at home and internationally, was further promoted in the Higher Education White Paper for England (June, 2011). A significant consequence of this shift is that academics in the UK are generally required to adhere to a number of internal policies introduced in an attempt to increase perceived student satisfaction, such as student feedback policies. Much has been published about learning and teaching and internationalisation at sector and institutional level, as most universities now have international policies and strategies for enhancing learning, teaching and assessment, yet little literature from the UK directly relates to our students' and teaching staff's experiences. Luxon and Peelo (2009) highlight that the emphasis of university policy tends to be on institutional structure rather than on teaching and learning. For internationalisation to be a positive experience for both students and university teachers,

more research is required in the effect that internationalisation has on learning and teaching and what strategies can be put in place to enhance the classroom experience.

Specialist knowledge is central to being an academic, and integral to university teaching. It is widely assumed that it is university teachers' specialist knowledge that attracts students and other academics to institutions. However, it is imperative to distinguish between the experience and academic knowledge of the teacher's specific discipline and the experience and knowledge of teaching per se. The vast majority of university teachers hold a Doctoral level qualification in their specific discipline, and many are members of professional bodies associated with their discipline, yet far fewer hold teaching qualifications. For English institutions this rages from 3% at the University of Cambridge to 84% at Teeside University (HEFCE, 2014–15). It is argued (Eraut, 1994; Mahoney, 2011, as cited in Parsons, Hill, Holland, & Willis, 2012) that university teachers need both subject specialist knowledge and educational specialist knowledge to be considered true professionals. There has been resistance to staff development programmes for university teachers for a number of reasons, such as the notion that prioritising teaching knowledge over specific discipline knowledge can be viewed as a devaluation of an academic's subject professionalism. As previously alluded to, rewards for research activity are often greater and less ambiguous than rewards for teaching and, as raised by McWilliam et al. (2002), there are concerns about the sort of knowledge that is being carried off as 'truths' in educational professional development programmes. However, following the influx of international students, which brought about a number of challenges, staff have argued that they are not equipped to deal with the needs of the new student demographic. There was an interest at sector level to have staff development programmes to support teaching international students. The last decade has seen an upsurge in published guides and programmes to support the teaching of international students, but much of the emphasis is around English proficiency and addressing cultural behaviours such as working in groups, and plagiarism. Some universities have developed support material for staff around developing students' critical thinking skills and internationalising the curriculum. There is, however, little that addresses students' conceptions of learning and different approaches to studying.

In response to the widening student demographic and increased emphasis on teaching qualifications for university staff, resourcing for institutes and/or centres for academic support and development has grown immensely over the last decade. The location, structure and administration of such centres vary greatly across the sector. Some universities host central student academic support separately from staff development in learning and teaching, while other universities opt for a devolved model of student academic development located within the disciplines, with a separate department overseeing staff development in learning and teaching. It is within the role of such centres to champion academic skills and support staff to develop an appropriate pedagogy for the student population.

The gap between institutional learning, teaching and assessment policies, which are central to student academic support and staff educational development, and practice in the classroom is arguable widening. As higher education experiences massification, globalisation and the battle for worldwide excellence, there is a greater need than ever to ensure that both staff and students have a clearer understanding of students' learning conceptions and how these play a role in their learning experience.

1.4 Summary of Chapter 1

This chapter has laid out the personal and policy context for the research. It outlines the academic career of the researcher and provides a backdrop of the higher education environment at the time immediately prior to data collection, with a particular focus on the internationalisation of higher education and the growing diverse student body. It was deemed relevant to include local and national responses to internationalisation and the massification of higher education in the UK to understand how and at what level this research will feed into future policy and practice to positively impact the international student experience. There has been little reference to these issues in the literature in the field, which is constantly growing but is highly contested and inconclusive. The following chapter provides a critical review of relevant literature, presenting a theoretical rationale for this study. Research in the field of learning in higher education rarely provides the reader with a policy context, which is fairly central to the findings and application of outcomes, given the international, national and local cultural differences in educational policy and practices.

Due to the constantly changing environment, data regarding student numbers are not current. The information provided in this chapter constitutes the data which provided a context for this research project, therefore, including current data regarding student numbers was not considered to be appropriate. The White Paper (2011) 'Higher Education: students at the heart of the system' has been superseded by the 2016 policy paper, 'Higher Education: success as a knowledge economy'. This, however, is not discussed as, although relevant to the outcomes, it did not provide the researcher with a framework for conducting this research.

Chapter 2: Literature Review

2.1 Introduction to Chapter 2

Defining and exploring the process of learning has been of great interest to philosophers and scholars since records began. Plato, Socrates, Confucius, Einstein, Pavlov, Skinner, Thorndike and many others are famous for their chronicles on the process of learning; however, Piaget (1896–1980) is one of the most influential Western modern theorists who attempts to document the development of the learning process in humans. Piaget's (1959) Constructivist theory views learning as being constructed by the learner rather than passively receiving information from the teacher. Mental schemata are used to organise knowledge and new experiences. As we develop, our schemata become increasingly complex and sophisticated and rooted in the cultural contexts in which they occur. Therefore, according to Piaget (1959), learning is not passively received through the 'telling' of information by others, the teacher, but is actively built, or constructed by the learner, placing the individual at the centre of the learning process. Research in this field has been active for the last sixty years with varying intensity. More recently, publications in the area of learning have derived from domains outside psychology – the discipline from which many of the central concepts and theories originate.

Modern research on learning styles is vast, offering myriad definitions and concepts, such as 'learning styles', 'learning strategies' and 'approaches to learning'. While such terms can be confusing in the literature, they have been defined differently in order to make specific points of criticism against one another. These theories have led to the development of various instruments, inventories and models, many of which are used in educational settings and the workplace to evaluate how students/employees learn with the purpose of improving learning and output. This chapter will provide an overview of the learning literature and the related instruments used to measure aspects of learning, thus providing a rationale for the direction of this thesis. It will then focus on the development of learning conceptions with a particular focus on learning conceptions and academic achievement in a variety of disciplines. The section on learning research in academic disciplines will lay the foundation for the choice of participants in the thesis, although this will be further discussed in Chapter 3 (section 3.4). Culture and its dimensions are addressed in section 2.3 as a number of cross-culture studies exploring

learning conceptions are appraised. The chapter closes with some conclusions drawn from the literature leading to the aims of, and research questions for, the thesis.

2.2 Review of the literature

2.2.1 A brief summary of the learning styles literature and related instruments

Historically, the modern learning-styles literature was dominated by psychologists, initially by cognitive and perceptual processing (e.g. Pask, 1976; Witkin, Moore, Goodenough, & Cox, 1977), but more recently, an individual differences approach has become more commonplace (e.g. Riding & Cheema, 1991; Riding & Rayner, 1998). There is a growing assumption among a number of senior educators that teachers and course creators should pay close attention to students' learning styles, identifying and measuring them and encouraging students to reflect on them and design teaching and learning inventories around them. This belief has been strongly supported by the Higher Education Academy (HEA) since it was founded in 2003 (Evans, Muiji, & Tomlinson, 2015). This has been paralleled by a growth in the number of Centres for Excellence in Teaching and Learning and increased opportunities for academic promotion through a teaching route in UK universities (Cashmore, Cane, & Cane, 2013).

Underneath the appeal for seeking a better understanding of learning styles, as defined in the introduction to chapter 1, lies a theoretical incoherence, with no agreed vocabulary and little consensus. The literature is compiled of numerous small-scale studies from a variety of disciplines, mainly located in business faculties, and rarely producing clear implications for practice. The diverse disciplines, which include education, sociology, psychology as well as business and marketing, tend to interpret evidence and theory differently as they value different perspectives and use different language. De Bello (1990) commented that there were as many definitions as there are theorists in this field, although over the last twenty-five years, a number of academics have endeavoured to untangle the literature. This has resulted in many authors attempting to provide simplistic answers to complex issues, leading to a dearth of 'intellectual trench warfare' that is common in academia.

There is commercial value in promoting certain learning models and instruments which are often used to determine learning styles, particularly in professional development

within businesses, without any reference to the research literature. The detachment from the academic literature compounded by the conflicting assumptions that underpin learning means the thousands of papers in the field of learning have no comprehensible direction and, decades after the early publications, theory has not developed as expected given the number of research teams working in the field. The volume of research conducted in this discipline is extraordinary, presenting fundamental problems for practitioners, policy-makers and researchers who are unable to engage with all of the original papers and instead rely on reviews in the field which attempt to impose some order, in varying degrees of academic rigour.

As it is such a vast field, there are numerous conflicting assumptions underpinning conventional ideas and the most common models of learning. Some research derives from brain functioning, or how neural activity in different areas of the brain affects learning. Other work reports established psychological theories such as personality and intellectual ability, that is to say, how fixed traits influence learning. The level of stability within a model varies among researchers, with some theories representing learning as 'flexibly stable', arguing that previous experience and other environmental factors will create preferences and approaches, and that styles may vary in different contexts or different tasks. There are also a number of papers that question the role of the educator, calling for them to challenge and extend the student in their approaches or simply to 'meet their needs' as a consumer of learning.

Curry's (1983) 'onion' model attempts to categorise different research perspectives, the outer layer being 'instructional preference', moving inward to 'information processing', with 'cognitive personality style' being at the core. Although this model is considered useful by many theorists as it presents many models classified into categories, there is little agreement as to what lies at the centre, as assumptions about the stability of cognitive styles are not supported by empirical evidence. Cassidy (2004) attempted to clarify areas of ambiguity surrounding the measurement of modes of learning and its appropriate instruments. During this same period, Coffield, Moseley, Hall, and Ecclestone (2004) endeavoured to further unravel this theoretical incoherence in an extensive review of learning styles inventories commissioned by the Learning and Skills Development Agency. This review organises different learning models into 'families' according to some of the overarching concepts behind them, allowing for some order to

be placed upon the numerous separate approaches previously identified in the literature. The system used in this review certainly has some limitations, such as oversimplification of the classifications/families and criticism from original authors regarding their location. However, it is the author's opinion that this is the most respectable publication that attempts to make sense of the myriad models in learning styles and pedagogy.

The continuum developed by Coffield et al. (2004) is based upon the degree to which the theorists consider their model to be fixed, with strong beliefs around the influence of genetics and fixed traits on the left side. At the right end of the continuum, personal factors such as motivation, and environmental factors such a curriculum design, culture, teaching and assessment, are seen as being most influential in student learning. These underlying assumptions about traits influence how the inventories are developed, how they are evaluated and the pedagogical implications.

The following paragraphs adopt the composition and the classification system developed by the Coffield et al's. (2004) systematic and critical review as it is the most succinct summary of a vast disarray of research papers, inventories and related theories. Following a review of definitions, influences, descriptions, scope of instruments, measurements and inventories, reliability and validity, implications for pedagogy and evidence of impact, Coffield and his colleagues identified five 'families'.

The first 'family' includes theorists who perceive learning styles and preferences to be constitutionally based. There are a number of widespread beliefs around the genetic influence of certain characteristics, indeed many cognitive theorists believe that cognitive learning styles are fixed, or at least are very difficult to change. Many of the arguments for fixed learning styles are based on genetics, although there are no DNA studies in which a learning gene has been identified. Evidence of modality-specific processing in relation to learning styles preference is weak and conceptions of how cognitive style is related to brain function are not supported by empirical evidence. The most influential authors who fall into this 'family' are Rita and Kenneth Dunn, the Dunn and Dunn model (Dunn 1990; Dunn & Dunn, 1992) producing several self-report instruments which have been dominant in elementary schools in the USA and other countries, including Australia, Malaysia, Singapore, Denmark and Finland. Although this model attempts to explain human learning and considers motivational factors and

both physiological and environmental elements, there is a lack of independent evaluation and it considers instructional preferences rather than learning per se. Another influence is Gregorc's Mind Styles Model and Style Delineator. Gregorc (1982) identifies four styles, concrete sequential, abstract sequential, abstract random and concrete random, arguing that everyone can make use of all four styles but there is an inborn inclination towards one of them. He claims that styles are natural abilities and not amenable to change.

The second 'family' identified by Coffield's review is the cognitive structure family. The group of theorists in this section suggest learning styles reflect deep-seated features of the cognitive structure, including patterns of ability, and, therefore, are not particularly inclined to change. Richard Riding has worked with a number of authors defining cognitive learning styles over the last 30 years. Riding and Rayner (1998) defined cognitive styles as "the way the individual person thinks", and as "an individual's preferred and habitual approach to organising and representing information" (pp. 7–8), a very reductionist view. Riding and Cheema (1991) claimed that "strategies may vary from time to time, and may be learned and developed. Styles, by contrast, are static and are relatively in built features of the individual" (pp. 195–196). This is the most succinct definition, differentiating learning styles from learning strategies.

Riding (2002) argues that it is important to achieve a match between cognitive style, the teaching approach and the manner in which the resources are structured. He developed a computerised assessment measure, the Cognitive Styles Analysis (CSA), one of the few measures in the field that is not self-reported, but is based upon a comparison of speed of response. Although not reported by Riding, others (e.g. Cook, 2008) have found the CSA to have poor reliability and it has been argued that too many recommendations are made without reference to empirical evidence.

Learning style as a relatively stable personality types covers the third 'family' of theorists in Coffield's continuum. The Myers-Briggs Type Indicator (MBTI), based on Jung's theory of human personality, is the most influential instrument deriving from this cluster. Theorists from this family operate at the interface of intelligence and personality, embedding learning styles with personality traits that shape an individual's interaction with the environment. The MBTI has enjoyed immense commercial

success, but its validity as a measure of learning styles and as an aid to pedagogy is dubious. Other prominent instruments located in this cluster are Apter, Mallows and Williams' (1998) Motivational Style Profile (MSP) and Jackson's (2002) Learning Styles Profiler (LSP). The MSP derived from reversal theory, which is a theory of personality rather than a theory for learning. However, reversal theory is relevant when applied to learning styles as it bridges the gap between biological and social explanations of the human experience with much focus on motivation. As with the MBTI, the MSP is a measure of personality, not a learning style, although it has major implications regarding how we think about learning styles. The LSP derives from the work of Eysenck's personality theory and is used more as a measurement for learning in the business environment than in education. The relevance and value of extensive feedback from this instrument has yet to be fully and accurately evaluated. The theories in this family challenge fixed-trait models of learning styles, but require further research in relation to the implications for pedagogy in higher education.

The next of Coffield's 'families' covers flexibly stable learning preferences. The most influential of these is Kolb's (1984) Experiential Learning Theory (ELT), which defines learning as "the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience" (Kolb 1984, p. 41). The central principle of ELT is a four-stage cycle of learning which includes experiencing (concrete experience or CE), reflecting (reflective observation or RO), thinking (abstract conceptualisation or AC), and acting (active experimentation or AE). Combinations of the above modes result in four definitions of learning; diverging, assimilating, converging, and accommodating. Although commonly referred to as the "Kolb Learning Cycle", this cycle was proposed by Kurt Lewin (1946), who developed the model from engineering, while Kolb (1984) popularised Lewin's proposal and has been recognised for its development ever since. The Kolb Learning Style Inventory (LSI) was originally devised in 1976, but the revised version (Kolb, 2005) is a 12-item inventory that asks respondents to rank four sentence endings that correspond to the four learning modes. Because of the forced choice, rank scores are produced, determining the respondent's learning style (see Kolb, 2005 for a detailed account). The implications of Kolb's work for pedagogy have been drawn from the theory rather than from the empirical evidence and there is no evidence

that ‘matching’ improves academic performance (the relationship between enhanced learning and academic performance will be discussed in section 2.2.3).

There have been on-going problems regarding reliability and validity of the LSI for decades. Honey and Mumford’s (1992) Learning Style Questionnaire (LSQ) was developed from Kolb’s LSI. Honey and Mumford (1992) accepted Kolb’s model but cited poor validity and disputed the predictive accuracy, leading them to develop an alternative measurement. They identified four learning styles; Activists (prefer situations in which they can get involved), Reflectors (prefer to listen and observe), Theorists (prefer systems and concepts), and Pragmatists (prefer to try things out) (Honey & Mumford, 1992). Kolb’s (1976, 2005) LSI and Honey and Mumford’s (1992) LSQ have significant overlap. Both have been identified as being useful for helping devise personal development plans in the business environment, but the evidence of pedagogical impact in higher education is weak. Another commonly used instrument that derived from this ‘family’ is the index of learning styles (ILS) (Felder & Silverman, 1988) which was originally designed for identifying learning styles of engineering students. The ILS identifies four bipolar scales related to preference for learning style; active/reflective, sensing/intuitive, visual/verbal, and sequential/global. These scales can be linked to similar learning styles scales that is to say, the active/reflective scale is comparable to Kolb’s AE and RO dimension (McChlery & Visser, 2009). The ILS gives a profile rather than a score and the learning style dimensions are a continuum rather than a set score, therefore are not mutually exclusive. However, this can result in statistical weakness (McChlery & Visser, 2009). There are a number of other widely used instruments deriving from similar theories, for example, Allinson and Hayes’ Cognitive Style Index (1996), which has very high reliability and validity scores, and the Herrmann Brain Dominance Instrument (1982), largely ignored in the academic literature, although well established in the business world.

The final ‘family’ identified by Coffield and his colleagues represents the theories and the resulting inventories coming from a body of research that favours an active view of approaches and strategies rather than styles. These models emphasise the role of previous experiences and contextual influences on student learning. This work derives from the work of Pask (1988), who identified a serialist and holist strategy that students employ in achieving understanding, and Marton and Säljö (1984), who identified a deep

and surface approach. Following the work of Säljö and colleagues, there have been numerous studies leading to a commonly accepted view that there exists a hierarchical set of conceptions of learning that show a developmental trend, with higher levels reflecting a constructionist view of learning, and lower levels representing learning as reproduction of facts (conceptions of learning are considered in more detail in the next section, 2.2.2). The majority of researchers in the field have made the assumption that 'better' learning outcomes are attained by students who sit at the higher end of the hierarchy, with often no reference to styles of teaching.

A number of inventories have been developed which 'measure' approaches to learning and conceptions of learning. Biggs (1987) developed the 3 P model, an integrated system consisting of three phases in student learning; presage, process, and product. Presage refers to factors, such as students' prior knowledge, commitment, teaching context in terms of expertise, and ethos of the classroom; process refers to teaching and learning activities and motives for learning; and product refers to learning outcomes (Biggs, 1987). The Study Process Questionnaire (SPQ) (Biggs, 1987), is a diagnostic tool designed to identify students' learning approaches, the process component of the model. The SPQ provides feedback on the learning approaches in three domains; the surface strategy, the deep strategy, and the achieving strategy (maximizing performance while optimizing efforts to achieve goals).

Noel Entwistle is the most influential of the theorists in this family. He has worked for over 30 years developing a heuristic model of the teaching-learning process with an aim to encourage students and teachers in higher education to reflect on current practice to enhance the quality of student learning. Drawing on Marton and Säljö's deep and surface learning (1976), Entwistle argues that students who have a sophisticated conception of learning adopt a deep approach in order to understand concepts, whereas students who conceive learning as memorizing or acquiring facts are likely to adopt a surface approach. Similar to Bigg's achieving strategy (1987), Entwistle suggests that summative assessment in higher education should promote a strategic approach, where students combine both the surface and deep approach to gain maximum marks. From this theory, several different versions of an inventory have evolved, measuring students' approaches to learning: the Approaches to Studying Inventory (ASI) (1981); the Course Perception Questionnaire (CPQ) (Ramsden & Entwistle, 1981); The Revised

Approaches to Studying Inventory for Students (ASSIST) 1997); and the Approaches and Study Skills Inventory (ALSI) (2006). Unlike the previous instruments discussed, Entwistle's inventories were particularly designed for the context of higher education and have influenced staff development programmes in UK, Australia, South Africa and Sweden.

Vermunt's (1996) framework for classifying learning has been clearly influenced by deep, surface and strategic approaches. He defines four learning styles within his framework, meaning-directed, application-directed, reproduction-directed, and undirected, each have distinguishing features in five areas resulting in linked sets of behavioural, cognitive, affective, conative, and metacognitive characteristics. Vermunt argues that the framework should be flexible, as his learning styles are not mutually exclusive. The Inventory of Learning Styles (ILS) (Vermunt, 1994) includes learning strategies, motivation for learning and preferences for organising information. There is, however, little evidence of impact on pedagogy.

The final influential theorist in the approaches, strategies, orientations and conceptions of learning family is Robert Sternberg, who developed the theory of thinking styles and the Thinking Styles Inventory (TSI) (1999). Sternberg describes learning styles as how a student prefers to learn, whereas thinking style is how students prefers to think about material as it is being learned. He produced an original theory of mental self-government, resulting in a taxonomy of 13 styles.

The literature on the practicalities of the learning styles inventories is varied, with some theorists arguing that understanding the learning styles literature is absolutely necessary for students and university teachers (Fielding, 1994). Some make exaggerated claims about the benefits of the models, whereas others argue that the models educators choose are "almost immaterial, since the instructional approaches … for each of the models are essentially identical" (Felder, 1996).

Having reviewed the learning styles literature it is the view of the author that the inventories reported in the approaches, strategies and orientations family have had the greatest influence in higher education. With reference to the political context and personal background of the researcher, as reported in Chapter 1, students' motivational

and environmental factors are considered to be of more relevance. It is, therefore, upon this field that the thesis will focus.

2.2.2 Conceptions of learning

According to Pratt (1992), conceptions are lenses through which people view the world, interpret and act in accordance with their understanding of the world. Schmeck (1988) describes conceptions of learning as the "variations in students' explanations of their experiences of learning" (p. 3). Research into conceptions of learning has revealed that students conceive learning in qualitatively different ways. Marton, Dall'Alba, & Beaty (1993) maintain that a conception of learning includes two components; a way of seeing what is learned, and a way of seeing how it is learned. A completed conceptualisation of learning includes both components.

Entwistle and Walker (2000) describe conceptions of learning and teaching as defined beliefs which form the background for approaches, meaning the sets of practices and strategies which will be implemented in the different contexts of learning and teaching. According to these theorists, students' conceptions of learning will determine how they interpret learning tasks and objectives which will influence how they learn. The initial momentum for work in this area derived from the work of Perry (1968, 1970). Through a series of interviews and questionnaires, Perry studied the epistemological beliefs of undergraduates; he concluded that, because some students' conceptions of knowledge were different from their teachers, learning was more difficult for those students. He believed that students' knowledge developed through exposure to different ways of thinking. The educational literature on conceptions of learning focuses on learning as a cognitive process rather than the nature of knowledge; there is a vast body of research on epistemological beliefs and learning (e.g. Chan, 2007; King and Kitchener, 1994, 2004; Piaget and Inhelder, 1969; Schommer, 1990), however, this will not be explored in detail within the scope of this thesis.

The nature of conceptions of learning and how they relate to students' approaches to studying was first introduced by Roger Säljö (1979). Using a phenomenographic approach with ninety participants with varying levels of education, he investigated a range of different participants' concepts of learning from which he proposed a hierarchy of different conceptions. Since the original publication, several researchers (e.g. Martin & Ramsden, 1987; Van Rossum & Schenk, 1984) have replicated his findings.

Furthermore, Giorgi (1986) identified five types of concepts of learning which corresponded with Säljö's conceptions without being aware of Säljö's results. It can therefore be argued that Säljö's (1979) five qualitatively different conceptions of learning are well established (see Table 2.1).

The first three of these conceptions represent a surface understanding of learning, while the fourth and fifth conceptions represent a deep understanding of learning. Similar groups of five categories have been recognised by a number of other researchers since Säljö's original paper (e.g. Prosser & Webb, 1994). A sixth dimension was initially introduced by Van Rossum and Taylor (1987); 'learning as changing as a person', however, the literature credits this dimension as being added by Marton, Dall'Alba, and Beaty (1993). In their longitudinal phenomenographic study, they characterised Säljö's five conceptions in greater detail, precisely differentiating and fully integrating the already established five conceptions, as well as identifying another category. The study had a dual purpose. Marton and his colleagues present a more precise characterisation of the different conceptions of learning than in previous papers and they identified relationships between them. They found that 'learning as changing as a person' is hierarchically related to 'understanding' and 'seeing something in a different way'.

Marton, Dall'Alba, and Beaty (1993) argue that their sixth category is the most sophisticated hierarchically. It must be noted that Marton, Dall'Alba, and Beaty's study focuses on Social Science Open University students' general philosophical beliefs about learning throughout their six years of study, rather than contextually learning in a university environment. As is the case with Open University programmes, the drop-out rate is high, with only 8 of the original 29 completing the study. The benefit of the longitudinal aspect is the ability to demonstrate that learning conceptions are developmental and linked with length of time in education and experience.

Purdie, Hattie, and Douglas (1996) identified nine categories of conceptions of learning in their study, which explored the learning conceptions of Australian and Japanese secondary school children. The purpose of their study was to identify, describe and compare their self-regulated learning strategies and conceptions of learning. This research introduces the concept of cultural differences in conceptions of learning, which will be explored in more detail in section 2.4. They found that the Japanese students viewed learning from a much broader perspective than the Australian students did. For

them, learning is lifelong and leads to personal fulfilment, whereas the Australian school children related learning to what happens at school. Despite the differences in conceptualisations, both groups used similar strategies, with a conception of learning as 'understanding' related to a greater total use of strategies.

Purdie et al.'s (1996) first six conceptions can be mapped to previous studies (e.g. Marton, Dall'Alba, & Beaty, 1993, see Table 2.1). Marton et al.'s (1993) consumption metaphor fits with Purdie et al.'s data for their first conception, 'learning as increasing one's knowledge'. Purdie and colleagues added 'studying' to their second conception, due to the frequency their participants related studying to memorising and reproducing. In line with previous research, their third conception made reference to the application of knowledge. As with Marton, Dall'Alba, and Beaty (1993), 'learning as understanding' made reference to gaining meaning. However, the visual metaphor used by Marton and colleagues is not as valid here, as Purdie et al.'s participants rarely referred to 'having a fuller view'. Perhaps, as their participants were school children, the focus for understanding was directly related to the classroom experience. Much research highlights a dichotomy between memorising and understanding, but Purdie et al. found that their participants viewed learning as involving both processes. The notion of expansion dominated descriptions which lead to the fifth conception 'learning as seeing something in a different way'. 'Personal fulfilment' fits with Marton et al.'s (1993) 'changing as a person' conception, leading to personal growth, maturity and improvement. Learning as a duty was first documented by Cliff (1995, cited in Purdie & Hattie, 2002). Although only referred to by one Australian participant and fourteen Japanese children (7.22%), the authors viewed it as culturally important enough to add to their categories. 'Learning as a process not bound by time or context' refers to lifelong learning, a gradual continuous process. Although this could be compared to Tynjala's (1997) 'learning as a developmental process', this conception is largely unidentified in previous conceptions of learning research. This is surprising, given that the Australian OECD Education Ministers declared 'Lifelong Learning for All' a policy priority in 1996 (OECD, 2008) and Adult Learning Australia, which promotes lifelong learning, has been in existence for more than 50 years. 'Developing social competence' was exclusive to the Japanese group and could be comparable to Tynjala's sixth category, 'learning as an interactive process'. This category focuses on relationships and interpersonal skills and, to some extent, social responsibility.

It is from these nine categories that Purdie and Hattie (2002) developed their conceptions of learning inventory which is considered in detail in Chapter 3 (section 3.5.1). An important aim of this study was to move beyond the identification of the range of categories of conceptions of learning to empirically test the dimensionality of those categories. Contrary to previous research, they did not find great differences between students' conceptions of learning. Implementing structural equation modelling, they found that the model which best fits data from their sample was one in which there were six general conceptions (see Table 2.1). This merges previous studies' second, third and fourth conceptions into one category. 'Remembering' and 'using information' have been identified in a number of studies as an overall surface conception, whereas 'understanding' is identified as a deep conception. Purdie and Hattie (2002) argue that this supports research in this field conducted in Confucian heritage cultures (e.g. Watkins & Dahlin, 1997; Marton, Dall'Alba, and Tse, 1993) which, unlike Western educators who dichotomise memorisation and understanding, places emphasis on memorisation as required to assist the development of meaning which leads to understanding. Purdie and Hattie (2002) found that this may also apply to Australian educational settings.

Utilising a phenomenographic methodology, but implementing different methods, Tynjala (1997) identified seven categories of description of conceptions which recognised learning as an unintentional and inevitable process, which is similar to Purdie et al.'s (1996) eighth category, 'a process not bound by time of context'. Tynjala is not as convinced of the previously accepted hierarchical system of the categories in her research, 'A certain kind of hierarchy may be seen in the categories ... but the hierarchical nature of the categories should not be taken strictly. For example, we cannot exactly determine whether describing learning in terms of information processing is at a higher or lower level than explaining learning as styles or approaches' (Tynjala, 1997, p. 284). It should, however, be noted that this study differs from the three previously discussed in this section, as these categories relate to the students' descriptions of the learning process, not definitions of learning per se, hence the inability for direct mapping of categories (see Table 2.1).

Tynjala's participants were a group of educational psychology students who were asked to write an essay on their own conceptions of learning before separating them into two

groups; one group followed a traditional learning programme, using lectures, text books and assessing by an exam, the second group, the constructive learning group, learned via extensive discussion and were assessed by an extended essay. Analysis of the 'before' and 'after' essays found that students' conceptions developed similarly in both groups. The constructive group, however, placed more emphasis on critical thinking.

More recently, van Rossum and Hamer (2010) present a six-stage model of students' learning and teaching conceptions. In a series of earlier papers, which adopt a classical phenomenography methodology, van Rossum and colleagues ask Dutch students to write short essays about their conceptions of learning. From this research they introduce a sixth learning conception to Saljo's (1979) original five, which they termed 'self-realisation' (van Rossum, Deijkers & Hamer, 1984, 1985; van Rossum & Taylor, 1987). They found no sex differences in their samples but learning conceptions develop with age, noting that self-realisation is unusual in the most common age group of higher education students, 18 to 25 years (van Rossum & Hamer, 2010). The aim of van Rossum and Hamer's work was to use the theoretical model to design a more student centred curriculum. They, therefore, also explored students' conceptions of good teaching in a number of studies which culminated in their six stage model of students' learning and teaching conceptions. In their research, which collected narratives of students studying for a degree in hotel administration in an original teacher-centred programme and a new student centred programme, they found some epistemological development had occurred as a result of the new curriculum. However, most students had just shifted from one reproductive conception to another. As the focus of this research is students' learning conceptions, table 2.1 does not report van Rossum and Hamer's teaching conceptions.

Following the original work of Säljö (1979), over three decades of research has resulted in a widely accepted view that there is a hierarchical set of conceptions of learning with students' conceptions following a developmental trend as students move through the education system. Conceptions at the upper end reflect an interpretative/constructivist view of learning as opposed to one in which learning is acquired and reproduced. Researchers and educators generally believe that students who hold conceptions of learning at the upper end of the hierarchy are 'better' learners and achieve greater

academic success than those who hold a surface understanding of learning. It is, however, interesting to note that that Säljö (1987) concluded that "the meaning of the concept of learning is highly ambiguous and not susceptible to any analytically satisfactory definition" (p. 104).

As can be seen from Table 2.1, there is a significant overlap across the key studies exploring students' learning conceptions. Although there is wide acknowledgement of the view that learning conceptions are hierarchical, authors have accepted this with varying degrees of evidence. There has been very little work exploring the development of learning conceptions longitudinally and even fewer studies conducted on learning conceptions of experienced learners. The debate regarding the relationship between students' approaches to learning and the conceptions of learning they hold has yet to be resolved, but there is no doubt that how students view and experience learning will influence how they approach learning.

Table 2.1: Conceptions of Learning

	Säljö (1979)	Marton, Dall'Alba, & Beaty (1993)	Purdie, Hattie, & Douglas (1996)	Purdie & Hattie (2002)	Tynjala (1997)	Van Rossum & Hamer (2010)
Surface approach	**An increase in knowledge**	Increasing one's knowledge	Increasing knowledge	Gaining information	Learning as an externally determined event/process	Increasing knowledge
Surface approach	**Memorising**	Memorising and reproducing	Memorizing, reproducing and studying	Remembering, using and understanding information	Learning as a developmental process	Memorising
Surface approach	**Acquisition of facts, procedures etc. which could be retained and/or utilised in practice**	Applying	A means to an end	Remembering, using and understanding information	Learning as student activity	Reproduction understanding/ application or Application foreseen
Deep Approach	**Abstraction of meaning**	Understanding	Understanding	Remembering, using and understanding information	Learning as strategies/ styles/approaches	Understanding subject matter
Deep Approach	**An interpretative process aimed at understanding reality**	Seeing something in a different way	Seeing something in a different way	Personal change	Learning as an externally determined event/process	Widening horizons
		Changing as a person	Personal fulfilment	Personal change		Growing self-awareness
			A duty	A duty		
			A process not bound by time or context	A process not bound by time or context	Learning as a developmental process	
			Developing social competence	Social competence	Learning as student activity	

2.2.3 Limitations of the Learning Conceptions and Approaches Literature

As previously mentioned, many of the key concepts in the field of approaches to learning and learning conceptions originate in qualitative, interview-based research. It is from this data that inventories and questionnaires, which generate quantitative data from large groups, are developed. This phenomenographic approach will be critically appraised in the following chapter (section 3.2). It is, however, worth highlighting some reported concerns regarding issues of validity in questionnaire-based research on student learning in higher education. Reliability and validity are the fundamental requirements of any research instrument. Students' scores on such questionnaires tend to demonstrate reasonable stability over time (Richardson, 2004). Longitudinal studies in this field are hard to carry out as, during the interval between the data collection period, participants can change their approaches to studying or their conceptions of learning due to contextual influences. However, Murray-Harvey (1994) found high reliability in a one-year longitudinal study of the SPQ and in a three year study of a small group of indigenous Australian undergraduate students, Boulton-Lewis, Marton, Lewis, and Wilss (2004) found that the number of students holding higher order learning conceptions increased over time . The issue of validity has caused more concern in the literature. Construct validity of individual items in the ASI and the SPQ have often been less than satisfactory and resulted in revised questionnaires with the less robust scales removed (e.g. Biggs, Kember, & Leung, 2001; Trigwell, Prosser, & Waterhouse, 1999). Scales on instruments tend to define global dimensions which are determined by factor analysis. Naturally, the number of factors extracted depends upon the choice of statistical model, which will vary across studies. Among the different questionnaires in students' approaches to learning, there is considerable commonality at a conceptual level, particularly with the surface and deep approach, as can be seen in Table 2.1. However, a broad conceptual overlap does not equate concrete evidence for relationships at an empirical level. Another concern is related to sample size in a number of studies related to approaches to learning (Richardson, 1990). Large samples of undergraduate students are often used, resulting in statistically significant observed differences, however, without reporting measures of effect size in addition to significance levels can produce misleading outcomes.

The construction and portability of learning approaches questionnaires have also been questioned (Richardson, 2004). The development of such questionnaires, which

followed conventional procedures, originated in the 1970s. The educational context has changed dramatically in the last forty years; therefore, as content validity is situation-specific, this has implications for the suitability of these questionnaires as a research tool in today's higher education system. As discussed in Chapter 1, the student demographic has also changed significantly since the 1970s, potentially making a number of items in the original questionnaires irrelevant. This was evidenced in Richardson, MacLeod-Gallinger, McKee, and Long's (1999) study on a formerly excluded group, students with hearing loss, in which a number of items in the ASI had to be re-phrased. To ensure meaningful outcomes in today's higher education system, questionnaires should be validated in each of the contexts in which they are used.

The final validity concern raised by Richardson (2004) is in relation to the self-report method. Questionnaires in this field either examine how students approach learning in an individual course or generally across all academic learning; they actually measure students' predispositions to learn in a particular way. This requires students to retain an accurate record of the mental activities involved in their long term memory, which is highly unlikely as information is often distorted in long-term memory in an attempt to reduce cognitive dissonance (Festinger, 1957). This observation was supported by Conway and Ross (1984), who found that, in relation to rating their study skills, students did not always provide valid and accurate accounts of their dispositions and capabilities.

Mogashana, Case, and Marshall (2012) argue that inventories do not always tell us what we want to know about student learning. They used the Approaches to Learning and Studying Inventory (ALSI), a form of the classic ASI which makes up part of the Experiences of Teaching and Learning Questionnaire (ETLQ) used in the large cross-institutional project (Entwistle, McCune, & Hounsell, 2002). The ALSI, which asks students to reflect on a particular course, was administered two weeks into the first quarter, then again two weeks into the final quarter of an Engineering course in a South African university. Eighty students completed both phases; ten students with a diverse range of responses in the ALSI were then selected for interviews, which took place two weeks after the final questionnaire was completed. Analysis of the data found a range of contradictory responses to inventory items, and reasons for this were 'certain statements confused students', 'one word in a statement prompted a problematic

response', and the 'response depended on a particular context'. In a similar study, Lindblom-Ylane (2004) found that a student experienced genuine conflict between how he wanted to study and the learning requirements of the course, resulting in conflicting questionnaire responses.

From a theoretical perspective, Haggis (2003) highlights the lack of critique in the conceptions of learning literature. She draws attention to the numerous studies which replicate and extend established theories and challenges the lack of conceptual analysis in this field. In her paper, Haggis (2003) asks, "What, exactly is the model describing?" (p. 91). She argues that the concepts of deep and surface learning are transformed by some theorists (e.g. Kember & Yan, 2001) to learning styles, confusing changeable strategies with fixed traits. Another paradox in the literature, to which Haggis draws attention, is the lack of consideration for individual differences. Theorists have shown that two students can take different approaches in the same teaching environment, highlighting that it is the students' views and personal understanding which create their approach, not the context. Yet the same authors propose that course creators should induce deep learning within their syllabus, suggesting that a change in context can promote a change in learning approach. A deep approach is defined as having some form of 'personal meaning', but this term is very general and can therefore be interpreted in a variety of discipline-specific ways. Haggis argues that 'personal meaning' is highly constrained by discipline boundaries, and even further by the lecturer who is delivering the material and marking the assessment. Alternatively, 'personal meaning' for the student may be related to aspects of their lives that are not directly associated with learning in an academic context. She extends this debate to highlight the contradiction in terms of the theoretical concern with context, a general model, which has to be developed out of specific situations. Haggis concludes by suggesting that an exploration of academic literacies in specific learning contexts would offer a better model, particularly in relation to the "failing student" or "low quality learning" (p. 99). In a later article, critically reviewing forty years of student learning research in higher education, Haggis (2009) argues that we need to think differently, examining our epistemological and ontological assumptions, and developing fundamentally new perspectives.

Webb (1997) raises a number of criticisms regarding the phenomenographic methodology implemented in this field. He argues this is related to the weak epistemology underpinning the theories; this will be explored in detail in the following chapter. In this paper he also suggests that the notion of deep and surface approaches is merely a metaphor. This, however, is strongly rejected by Entwistle (1997), who argues that, due to the vast body of empirical evidence to support the theory, it rightly has a major influence on pedagogy in higher education.

In higher education in the UK there is an emphasis placed on questionnaire data (i.e. NSS) which, as discussed, is often flawed. It is the view of the author that there is a place in the literature for instruments designed to measure learning conceptions from large cohorts of students, however, these must be interpreted with caution and considered alongside other data measuring students' understanding and experiences of learning.

2.2.4 Academic Achievement

The literature on students' academic performance can be traced back to the psychology of individual differences, when Binet and Simon (1916) proved that children's individual cognitive capacities could explain differences in educational performance. The last century has seen a wealth of research accounting for variation in academic achievement. The first half of the twentieth century focused on intelligence (e.g. Spearman, 1927). Following the publication of Piaget's (1959) Constructivist theory of learning, researchers began to consider the role of learning style and academic achievement. Richardson, Abraham, and Bond (2012) provide a succinct publication which reviews thirteen years of research into antecedents of university students' academic performance. Reviewing 7,167 papers from 241 datasets, they identified five conceptually overlapping but distinct research domains: (i) personality traits, (ii) motivational factors, (iii) self-regulatory learning strategies, (iv) students' approaches to learning, and (v) psychosocial contextual influences. The overall strongest correlate for academic performance was observed for performance self-efficacy, which falls into motivational factors. The authors distinguished performance self-efficacy from academic self-efficacy by the extent of student experience with similar challenges. Performance self-efficacy relates to students who are able to draw on familiar challenges to formulate expectations about performance, whereas when performance is

predicted on the basis of generalised representations of relevant competencies, it is referred to as academic self-efficacy (Zimmerman, Bandura, & Martinez-Pons, 1992).

There is an extensive literature on self-efficacy and academic performance and the relationship between performance self-efficacy and academic achievement is well recognised. However, the link between academic self-efficacy and achievement is less established. Chemers, Hu, and Garcia (2001) found academic self-efficacy and optimism were related to academic achievement in high school children. More relevant to this research project, Young, Sercombe, Sachdev, Naeb, and Schartner (2013) found strong relationships between academic grades, psychological well-being, satisfaction with life in their new environment, intercultural competence, language proficiency, and the degree, quality and patterns of social contact in their sample of 108 non-UK post-graduate students studying at a UK university.

With reference to student approaches to learning and achievement, Richardson et al. (2012) found the relationship between surface learning and academic performance was weak and negative, while deep and strategic approaches to learning were found to be positively associated with academic performance, albeit with weak correlations. Entwistle (2000) states that academic performance typically shows strong relationships between poor academic performance and a surface approach to learning, combined with a non-strategic lack of regulation. A deep approach is associated with good academic performance, and where the assessment requires a deep level of understanding, a strategic approach shows the strongest correlation with academic performance (Entwistle, 2000). Using the ASSIST, Cassidy and Eachus (2000) found academic achievement was positively correlated with a strategic approach, negatively correlated with a surface approach, and not related to a deep approach to learning. Cassidy (2004), in his overview of theories, models and measures, states that "the effects of [learning] style on performance are contingent on the nature of the task" (p. 438), suggesting that they are not generalisable.

Such relationships between deep learning and positive academic outcomes led to experimental attempts to induce deep learning (Entwistle, 1997; Marton & Säljö, 1984; Ramsden, Beswick, & Bowden, 1987). Much of this research, however, highlighted inconsistencies in policy and practice in UK universities. Teaching policies tend to promote 'deep understanding', whereas assessment practices often measure surface

learning, where memorisation and reproducing information was rewarded (Norton & Crowley, 1995). This, perhaps, explains why a number of studies have found an increase in a surface approach in the first year of university (Richardson, 2000).

The relationship between conceptions of learning and academic achievement has received less attention in the literature than one would expect, possibly due to the commonly held assumption that students' conceptions of learning are positively related to their learning outcomes. Students who view learning as an interpretative process aimed at understanding reality will 'change as a person' and perform better than students who view learning as increasing their knowledge. Van Rossum and Schenk (1984), Purdie et al. (1996) and Alamdarloo, Moradi & Dehshiri (2013) have claimed that there is a relationship between students' conceptions of learning and their learning outcomes. However, the evidence to support this claim is weak. Other papers (e.g. Martin & Ramsden, 1987; Norton & Crowley, 1995) have been cited as providing such evidence, but these studies tend to involve interventions that focused on improving students' use of learning strategies, and do not provide information about the relationship between conceptions of learning and learning outcomes in regular courses of study. In their cross-cultural study of conceptions of learning, Purdie and Hattie (2002) found that the self-rated academic achievement of students who endorsed all of their six conceptions of learning was higher than students who only endorsed the first few conceptions of learning. However, they did not indicate at what point of the course their students self-rated their academic achievement.

The importance of self-regulated learning and academic achievement is well established in the literature (Bandura & Schunk, 1981; Spates & Kanfer, 1977; Zimmerman & Martinez-Pons, 1986, 1990). Self-regulated learning focuses on how and why students control their own learning, that is to say, strategies students use as they engage with learning tasks rather than their ability or knowledge. Fuller (1999) found that the learning context had more influence on academic performance than conceptions of learning; he also argued that, as conceptions of learning are such complex constructs, categorising students into a single conception is fundamentally flawed.

Rienties, Beausaert, Grohnert, Niemantsverdriet, and Kommers (2012) explored differences in academic performance between home and international students through focussing on students' levels of academic and social integration. Their findings indicate

that the degree of students' academic success is highly complex. Academic adjustment was the main predictor of study-performance for Dutch, Western and Mixed-Western students, however this does not predict long term success as academic and social integration processes are not linear. Also exploring international student adjustment, Young, Sercombe, Sachdev, Naeb, and Schartner (2013) found strong relationships between academic grades, psychological well-being, satisfaction with life in their new environment, intercultural competence, language proficiency, and the degree, quality and patterns of social contact among 108 international post-graduate students at a UK university.

Exploring factors which influence students' academic achievement is highly problematic, as there is a lack of consistency in the literature as to how achievement and/or performance is measured. Several researchers use self-report measures but rarely define how these are collated. Students' understanding and experiences of learning influencing their performance is a plausible theory, however, the evidence is weak, as the relationship between learning conceptions, the learning context and learning approaches has not been confirmed.

2.2.5 Discipline differences

A lengthy debate regarding discipline differences began following Snow's (1963) notion of 'two cultures' and 'gulf of incomprehension' which he experienced between his academic colleagues in the arts and the sciences. More recently, disciplinary specialists are collaborating in researching real-life problems, breaking the boundaries between the disciplines, but there still remain marked differences in the ways different academic communities think and practice. Although the gulf may be narrowing, the cognitive distinctions between pure and applied, and hard and soft, subjects are well accepted (Middendorf & Pace, 2004). This relates to the different epistemologies, research designs and forms of measurement, and different disciplinary contexts possess their own norms, language and practices (Ballard & Clanchy, 1988; Becher, 1994; Lave & Wenger, 1999).

Neumann, Parry and Becher (2002) studied how disciplines influenced teaching, paying particular attention to hard and soft fields. They found that soft disciplines were more likely to emphasis instructional approaches and engage in critical thinking, fostering deep approaches to learning, than hard disciplines. Memorisation and application of

course concepts were more evident in the hard disciplines. A number of other researchers have found discipline differences in approaches; accounting students are more likely to use surface approaches than arts and social science students (Booth, Luckett, & Mladenovic, 1999), and engineering tends to be dominated by a surface approach to learning (Felder & Brent, 2005; Woods, Hrymak, & Wright, 2000). The work in relation to academic discipline and students' approaches to studying should not be considered in isolation from learning outcomes and academic achievement. Laird, Shoup, Kuh, and Schwarz (2008) found deep approaches to learning were more dominant in soft, pure and life disciplines, and senior students, irrespective of discipline, who engaged in deep learning performed better and reported greater satisfaction with their college experience than those who engaged in surface learning. However, clear comparisons across such publications cannot be made as some researchers refer to deep/surface learning as a descriptive concept bound by context, while others use the term normatively. There is a vast literature exploring such concepts located within different disciplines, which lie outwith the scope of this research. Nevertheless, in relation to the sample used in this thesis, it is worth providing a brief overview of learning approaches in health and life sciences.

Within a students'-approaches-to-learning-and-studying framework, Hounsell, McCune, Litjens, and Hounsell (2005) report upon a study of three final-year honours courses, in three separate institutions, in the biosciences using data from qualitative interviews and an experiences of teaching and learning questionnaire. Two clusters of themes emerged from this research: (1) engagement with the primary research literature and with experimental data, and (2) the students' growing mastery of the requirements and conventions of written and oral scientific discourse. The authors considered that "feeling comfortable with how knowledge is generated and disseminated in the biosciences" was a higher-order skill, therefore evidence of a deep approach. In this research students' experiences of engaging directly with experimental data, as well as the literature, seemed to lead to a shift in thinking. The authors also highlight three key observations from the research. The first being, similarities in ways of thinking and practicing, which describes "the richness, depth and breadth of what students might learn through engagement with a given subject area in a specific context" (p. 257), in the three different courses, although they adopt very different learning, teaching and assessment strategies. Their second observation is in relation to feedback. As well as a

desire for more extensive feedback, students in one course reported unease about guidance on tutors' expectations regarding assessment criteria and seeking further advice, and further alignment between intrinsic and extrinsic feedback was also identified. Their final observation was related to patterns of teaching and assessment which had not developed smoothly, and that a step change in adjustment was required in the later years of the programme. Although this work is broader than learning approaches, it addresses the issue of feedback and assessment which was a key theme in the qualitative component of this research (see Chapter 5, section 5.3).

2.2.6 Level of study

The vast majority of work in this field has focused on secondary school children, undergraduate students or on adult learners in training contexts. Richardson (1994) reported that there has been very little research, within a students'-experiences-of-learning framework, which focused on post-graduate students. A recent review of the literature found a growing body of work in students' transitions, from undergraduate to post-graduate study (e.g. Tobell & O'Donnell, 2013), however there is little development in this field conducted in relation to graduate students learning processes. This is surprising, given the commonly held notion regarding the hierarchical structure of conceptions of learning, demonstrated powerfully by Marton, Dall'Alba, and Beaty (1993) in their six-year longitudinal study of Open University undergraduate students. One would then expect that post-graduate students are more likely to hold Marton et al.'s (1993) sixth conception, 'learning as changing as a person', which they argued was the most sophisticated, hierarchically, than first-year undergraduates or school children. This has, however, not yet been established.

Cliff (1998) investigated conceptions of learning in a sample of post-graduate students enrolled on an Education Degree programme in South Africa. As well as being post-graduate students, this sample was also made up of educators who therefore may have had a deeper knowledge of, and interest in, conceptions of learning than other post-graduate students. It should be noted that a number of these students did not have English as a first language and were reported to come from academic and personal backgrounds, which may result in "adjustment, transition difficulties ... it is commonly assumed among educationists that these students' learning approaches are characterised by emphasis on role-learning patterns, minimalist and sterile engagement with course

material, and a tendency towards quantitative conceptions of learning" (pp. 209–210). Cliff found the most frequently occurring learning conception was 'learning as the acquisition of knowledge', contrary to the largely accepted hierarchical structure of learning conceptions, post-graduate students in Cliff's study view learning in terms of increasing knowledge. He also found in his qualitative study that a number of students (7 out of 35) made some reference to learning as a moral obligation to God. This would align with 'learning as a duty' (Purdie et al., 1996), which was introduced in the literature after Cliff started collecting his data.

A fairly thorough exploration of the learning conceptions literature in relation to level of study found no further publications reporting specifically on taught post-graduate students' learning conceptions. Saroyan, Dagenais, and Zhou (2009) did, however, find a trajectory of change in conceptions of learning of doctoral students from a variety of disciplines following a taught course on course design and teaching. Using an open coding procedure, they identified four conceptions of learning; (1) transmitting knowledge, (2) preparing context/managing instruction, (3) promoting course learning, and (4) promoting lifelong learning. They found a significant decrease in the responses in the first two categories and an increase in the frequency of responses in the last two categories following the course. No significant differences were attributed to course type or instructor.

There is no doubt that experienced learners are under-represented in the learning conceptions literature, which is remarkable, given the number of authors who support the notion of a learning conceptions hierarchy. It would be expected that there would be much published evidence to show that the more time a student has spent in education, the more developed their learning conceptions will be.

2.3 Culture and learning

Research on culture extends over many disciplines, such as Anthropology (Benedict, 1934; Hall, 1976), Psychology (Markus & Kitayama, 1991; Triandis, 1994) and Business Management (Hofstede, 2001; House, Hanges, Javidan, & Dorfman, 2004). Irrespective of academic discipline, researchers tend to agree with respect to definitions of culture. Culture is defined by House et al. (2004) as "shared motives, values, beliefs, identities, and interpretations or meanings of significant events that result from common experiences of members of collectives that are transmitted across generations" (p. 15).

Hall (1976) proposed a cultural classification of high-context and low context cultures, based upon how individuals use messages in routine communication. In a high-context culture, there are many contextual elements (i.e. body language, a person's status, and tone of voice) that help people to understand the rules, whereas in a low-context culture, very little is taken for granted. Such cultures rely heavily on nonverbal communication, using elements such as the closeness of their relationships, strict social hierarchies and deep cultural knowledge to convey meaning. In contrast, low-context cultures depend largely on words themselves. Whilst this means that more explanation is needed, it also means there is less chance of misunderstanding. It has been proposed that high-context cultures are more likely to learn through abstract conceptualisation, that is to say, thinking and low context cultures are more likely to prefer concrete experience, that is to say, feeling, as a style of learning.

Hofstede (1980), in a survey of 1000,000 IBM employees from forty countries, found that cultural differences exist across different national boundaries, and thus proposed a four-dimensional framework of national culture, to which a fifth dimension was later added. During the 1980s and early 1990s, the Confucian approach to work and education was being held accountable for the rapid economic growth in Asia. In 1996, Watkins and Biggs published an influential text 'The Chinese Learner: Cultural, Psychological, and Contextual Influences', which outlines the context of learning in the Confucian tradition. This trend influenced Hofstede (1997) to include the fifth dimension, which he termed "Eastern mind" as opposed to "Western mind" (p. 174). The five cultural dimensions identified by Hofstede (1997) are 'power distance', 'individualism-collectivism', 'masculinity-femininity', 'uncertainty-avoidance', and 'Confucian Dynamism'. The vast majority of research in the field of cultural influences on learning styles makes some reference to Hofstede's cultural dimensions or more recent frameworks that are based on Geert Hofstede's model, that is to say, Robertson and Hoffman's (2000) Cultural Values Scale.

Cultural background has a significant influence on conceptions about teaching and learning held by students, and a number of studies have identified people's conceptions of learning from a cross-cultural perspective. Much of the work in this area has focused on ethically Chinese students, findings from which reveal both similarities and differences in conceptions of learning. One of the major differences concerns the

relationship that is perceived between learning, memorizing and understanding. Historically, Western educators equated rote learning with memorisation which is clearly distinguished from understanding, resulting in a misperception of Confucian culture study methods. Kember and Gow (1991) argue that Chinese culture encourages students to use memorisation, not as an end in itself, but as a path to understanding. Chinese participants in Marton, D'Alba, and Tse's (1993) study investigating conceptions of learning with teachers in mainland China viewed understanding as the sum of "all the pieces of knowledge that are remembered or memorized" (p. 4). For this, participant understanding can be summarised as the first of the three conceptions in Säljö's hierarchy. Distinctions made by Marton and colleagues' participants were within memorisation (mechanical memorisation/memorisation for understanding) rather than between memorisation and understanding. In Western educational contexts, memorisation is equated with repetition or rote learning, which is considered to be shallow and not practical for deep understanding. However, with reference to Confucian learning styles, the relationship between memorisation and understanding is more profound than one process, in juxtaposition with the other.

Cross-cultural studies have led to research emphases which argue that understanding the phenomenon of learning conceptions might be better served if its interpretation takes account of cultural nuances in meanings which students attribute to learning. Perhaps more importantly, these studies have highlighted the need for caution amongst Western researchers in developing models which claim to explain variation in learning conceptions, and the meaning of the phenomenon, amongst non-Western learners and seek to describe certain beliefs about learning as hierarchically superior to others. The study by Purdie et al. (1996) has further underlined the need for caution in developing models of self-reported learning conceptions, based on studies amongst Western, individualist learners, which are then applied to Eastern, communalist groups of learners. These authors' comparative study of Japanese and Australian students' learning conceptions, learning strategies and self-regulated control over this learning, emphasises this point.

'Learning as a duty' is particularly prevalent in cross-cultural contexts (Cliff, 1998). His group of post-graduate students demonstrated learning was a duty to some supreme being. Cliff argues that if this is related to 'pleasing the lecturer' it demonstrates

implications as to how the lecturers are viewed by the students. Haggis (2003) argues that the lack of fit between the learning conceptions and approaches model and different cultural contexts reveals deep paradoxes and contradictions which exist within this framework.

There is a growing body of work exploring students transitions from home country to the country of study (e.g. Menzies & Baron, 2014) but this work focuses on integration into a new environment rather than student learning. The vast majority of cross-cultural work in a students'-experiences-of-learning framework focuses on Western versus Eastern learners. This is understandable considering the number of Chinese students studying in Western universities and the growing Chinese economy. However, there is a distinct gap exploring Indian, Middle Eastern and African students' learning conceptions. Given the rapidly increasing cultural diversity in university classrooms in the UK, there needs to be a greater focus on all cultures represented in UK campuses.

2.4 Summary of Chapter 2

The process of learning is a highly researched field, which can be as problematic as it is constructive for developing our knowledge of student learning in higher education. Due to the wide-ranging contexts and conceptual differences of research in this field, it is impossible to provide a complete and comprehensive view of the literature. Having briefly summarised the main frameworks and related instruments, it was determined that an active view of learning was the framework that best suited the researcher's background and stance, and the policy context of this study (see Chapter 1, section 1.3).

To establish how students approach studying, several researchers (e.g. Entwistle & Walker, 2000; Martin & Ramsden, 1987; Säljö, 1979) have sought to understand how students view and experience learning. This has led to a body of research identifying a hierarchy of students' learning conceptions, which are outlined in Table 2.1. This literature is not without theoretical and methodological limitations. It has been argued that this literature lacks conceptual analysis and a consideration for individual differences (Haggis, 2003) and that the epistemology underpinning phenomenography is inadequate (Webb, 1997), as well as the usual criticisms of questionnaire research. However, taking these critiques into consideration, it was considered appropriate to explore students' conceptions of learning using a recognised inventory from this body of work.

Maximising student performance is fundamental for each individual student and for UK universities, which are appraised for their completion rates. As alluded to in Chapter 1, UK universities are attempting to continually enhance the student experience and seek mechanisms to increase academic achievement. The literature on academic achievement has explored numerous variables which potentially affect student performance, the strongest correlate being performance self-efficacy, how students predict they will perform (Richardson, Abraham, & Bond, 2012). Several claims have been made regarding academic achievement relating to a deep and strategic learning approach (e.g. Entwistle, 2000) and negatively associated with a surface approach to learning (e.g. Cassidy & Eachus, 2000). However, there are few papers that scrutinise this further by investigating the relationship between students' views and experiences of learning and their academic achievement.

This chapter has highlighted that students from health and life science backgrounds are an under-represented sample in the learning research, with only one author, from the extensive literature, reporting outcomes from a Bioscience sample. The epistemological gap between academic disciplines may be narrowing as multi-disciplinary research teams are encouraged. However, there is still some evidence that there are learning and teaching differences across distinct disciplines (e.g. Laird et al., 2008).

Longitudinal work in the field of learning conceptions and approaches is scarce, possibly due to resource implications and selective attrition, leading to attrition bias and poor validity. This has resulted in a lack of appreciation of how conceptions of learning develop over time. As the literature suggests the existence of a hierarchy of learning conceptions, it would be expected that post-graduate students, as experienced learners would hold more developed learning conceptions than undergraduate students and school children. There is a void in the literature exploring post-graduate students' views and experiences of learning. Interestingly, the few authors who have studied this population (e.g. Cliff, 1998) found that the most common learning conception was at the lower end of the hierarchy, identifying an area requiring much further research.

Chapter 1 reports the rapidly changing student demographic in UK higher education, with particular reference to cultural diversity. Accurately evaluating cultural differences in learning is challenging, however, there is a growing body of research exploring student learning in Eastern versus Western cultures. This work does not

begin to cover the all students' cultural backgrounds in UK universities. As reported in the previous section there is a noticeable gap in Indian, Middle Eastern and African students' conceptions of learning, which this research attempts to address.

Considering the theoretical framework, academic achievement and the under-represented post-graduate and health and life sciences students in the learning conceptions literature, the following section will outline the overall aim and research questions for this piece of work. Chapter 3 will go on to consider the methodology for this research and report the methods implemented.

2.5 Research Aims

The relationship between the professional backgrounds and interests of the researcher and the research literature resulted in the developing of the overall aims for this research of:

- exploring the learning conceptions in a culturally diverse group of post-graduate health and life sciences students; and
- investigating how the students' learning conceptions related to their academic achievement.

These were addressed by the following research questions:

1. what does learning mean to a group of culturally diverse post-graduate health and life sciences students?
2. how do conceptions of learning interact with academic achievement?
3. are there cultural differences in conceptions of learning?

The following chapter will discuss how these research questions are addressed.

Chapter 3: Methodology

3.1 Introduction to Chapter 3

Chapter three outlines the methodology and method for this study. It begins by providing a brief introduction to phenomenography, the research methodology and philosophical framework upon which this work is based. The rationale for implementing a mixed methods approach is then provided in the research design section. There is no detailed reflection about the methods; as pointed out by Brannen (2005), "what is clear is that mixed methods research if carried out in a technicist way obviates the need for reflection about methods" (p. 13) and supported by Hammersley (2005), who argues, triangulation of qualitative and quantitative datasets are "investigative strategies that offer evidence to inform judgements, not techniques that provide guaranteed truth or completeness" (p. 12). The rationale for the selection of participants is explained with a detailed account of how participants were classified into cultural clusters. The data collection tools are then described, followed by the procedure for data collection. The final section provides justification for the analyses reported in Chapter 4.

3.2 Phenomenography

The first of the broad concepts associated with student learning in higher education was introduced by William Perry (1970), who wrote the original publication which suggested that students' conceptions of knowledge develop progressively throughout their educational experiences (Hofer & Pintrich, 1997). His main study involved conducting very open interviews with students at Harvard and Ratcliffe Colleges in the USA. He began by inviting students to mention anything that had stood out over the last year. As the lengthy interviews developed, students began to talk about their experiences of studying in ways that indicated how they were construing the nature and origins of knowledge, values, and responsibilities. From his analysis of these interviews, Perry identified a recurring developmental pattern in students' beliefs about knowledge over the course of their student life. He identified four stages, ranging from all knowledge is right or wrong (dualism) to a view that there are many different ways of looking at something (multiplicity), moving on to interpretations from objective evidence and results in a variety of conclusions (relativism) and, finally, acceptance that

all knowledge is relative (commitment within relativism). Several researchers have investigated Perry's work and there is much debate regarding belief systems across a variety of variables, including different academic disciplines. Perry's work on these epistemological levels was of great interest to a research group based in the Department of Education at the University of Gothenburg, Sweden, in the late 1970s. They too focused on the experience of the learner. One of the first studies on conceptions of learning was conducted by Säljö (1979), who asked adults with a variety of different levels of education, 'What do you mean by learning?' This began a programme of research which aimed to describe people's conceptions of learning, and the term, phenomenography, was used to describe the comparisons and systematisation of descriptions of such conceptions.

Although the term phenomenography was first used in 1954 by Ulrish Sonnerman to distinguish Jasper's psycho-pathological research from existential phenomenology (Hasselgren & Beach, 1997), the Gothenburg research group is credited for the emerging variations which have been used in the field of learning conceptions over the last four decades. Säljö's colleague, Ference Marton, published a pioneering paper in Instructional Science in 1981. This was the first scientific text that addressed the theoretical fundamentals of phenomenography. Since then, a considerable amount of work has been published with a number of variations mainly within the field of educational research.

Phenomenography is, therefore, a fairly new research tradition which sits within an interpretivist paradigm. It investigates the qualitatively different ways in which people experience or think about something (Marton, 1986). The nature of phenomenography was outlined by one member of the original research team, Lennart Svensson, in a paper titled 'The theoretical foundations of phenomenography', published in 1997. In this paper, Svensson describes Phenomenography's ontological assumptions as subjectivist, that is to say, the world exists and different people interpret it in different ways from a non-dualist viewpoint. Phenomenography's research object has the character of knowledge; therefore, its ontological assumptions are also epistemological assumptions (Svensson, 1997).

The emphasis of phenomenography is on description. Data are typically gathered by in-depth interviews with a small sample, with the researcher "working toward an

articulation of the interviewee's reflections on experience that is as complete as possible" (Marton & Booth, 1997, p. 130). The description attempts to harvest the qualitative similarities and differences in meaning as experienced by different participants. Data analysis sorts participants' responses into categories which become the phenomenographic essence of the phenomenon. These categories are related to one another, often though hierarchical associations. Phenomenographic data analysis is comparative and iterative, with the categories continually developing as the data are sorted and resorted. As experiences are described, understood and categorised, the emphasis is on the variations on the participants' experiences of the phenomenon and the perceptions of those experiences by the researcher.

Phenomenological research has had the greatest impact in Sweden, the UK and Australia and, more recently, Hong Kong in providing an agenda for researching and improving educational practice, with a growing number of educational practitioners becoming familiar with the deep/surface metaphor as described in the previous chapter. Over the last twenty years, as centres for educational research, policy and practice have evolved, an increasing number of higher education policy statements have been developed to promote teaching methods which endorse deeper approaches to learning. This increased acceptance of phenomenography has produced a paradigm shift in learning styles, presenting a paradox as it has attempted to produce a new approach to policy and research in higher education while at the same time providing continuity with previous work in the field.

Despite having different orientations, phenomenographic studies are all supported by the same set of assumptions. Researchers undertaking these studies assume that experience (past, present and expected) of a phenomenon is a significant influence in the development of a particular understanding of the phenomenon. Subsequently, they also assume that this understanding may not be the same for everyone. Integral to these assumptions is the belief that, when people experience, they experience some 'thing'. In other words, in learning considered from a phenomenographic perspective, students and lecturers have experiences of particular learning and teaching contexts, not of learning and teaching contexts in general (Prosser, 1993).

Prior to the introduction of phenomenography, the literature on learning styles had been very quantitative in nature with the majority of studies using standard instruments to

gather data from large cohorts. Entwistle, McCune, and Walker (2001) argue that qualitative research into everyday studying is needed to counter the way that psychometric measures oversimplify the complexity of studying in different environments. Entwistle (1984) argues that quantitative methods result in reductionism and the use of standard psychological inventories represent removed assumptions about chains of causality, whereas phenomenography represents students' experiences, reporting a true understanding of the phenomena, which necessarily involves a shift of perspective.

3.2.1 Strengths of Phenomenography

According to Enwistle (1984), the empirical nature of phenomenography, due to the rigorous method of qualitative analysis, carries the hallmark of scientific research while not following the methods of the Natural Sciences. This is one of the greatest strengths of phenomenography and the main reason the author was initially attracted to this methodology. However, as highlighted by Webb (1997), there is a tension between the notion of scientific rigour and "empathic understanding" (Entwistle, 1984, p. 13). The ability of the interviewer to empathise with the participants and understand the experience of the interviews does not fit with a positivist scientific approach.

The deep/surface metaphor that derived from phenomenography was exceptionally appealing to higher education; it is simple yet very powerful and a concept that university teachers whose discipline sits outwith the field of education can easily endorse. Numerous inventories were derived from phenomenographic research, which were easily analysed allowing teachers and students to engage with the concept and related practices. Surprisingly, there has been little resistance and virtually no backlash from the academic community.

3.2.2 Weaknesses of Phenomenography

Hasselgren and Beach (1997) report that the "meaning Gothenburg phenomenographers give to the term phenomenography is not always clear" (p. 192). This was highlighted in a debate in the literature which grew out of a number of publications in the Nordisk Pedagogik journal in the early 1990s. In response to a number of such criticisms, Hasselgren and Beach (1997) argue that this perception is related to the origins of phenomenography, which are empirical, and therefore the literature does not criticise

the epistemological and ontological assumptions. In response to this debate, phenomenographic researchers began to seek a philosophical foundation in phenomenology. Hasselgren and Beach argue that phenomenography should not be seen as a poor relation of phenomenology by drawing on the interaction between logic and empirical data in establishing the meaning of categories of description.

Phenomenographic researchers tend to pay minimal attention to reflexivity, although they do define experience as non-dualistic. Papers in the field do not address how the data and the findings reflect the understanding and experience of the researchers' own ideas and experiences, as the role of the researcher within the research situation is not considered relevant. Researchers view the data as descriptions of the relationship between the person and concept; this is accepted without question. Qualitative methods employed in phenomenographic research have little to do with hermeneutical understanding but instead seek positivist generalisation (Webb, 1997).

In the early development of phenomenography research there was no literature presented exploring gender and culture. The key attribute of phenomenography is the outcome space which constitutes the findings of the study. Hazel, Conrad, and Martin (1997) raise the notion of women being "lost in space" (p. 213). According to these authors women were not represented in the vast majority of populations in the early research as the disciplines used were male-dominated, as was higher education in the 1970s and 1980s. This issue has been addressed in more recent studies, for example, the population ranged from 47% – 58% women in studies the contributed to the development of the COLI (Purdie & Hattie, 2002). Hazel et al. (1997) also highlight the cognitive nature of the outcome space which ignores the affective dimension of women's knowing. Säljö (1994) highlights the point that phenomenographic outcome space is logically constructed and conceptual, however, this ignores the role of emotion, which, arguably, is integral to the way people understand the world around them. A number of philosophers think dualistically about emotion and thought (Plato, Aristotle, and Descartes) and this, argues Hazel et al. (1997), is perpetuated by phenomenography.

Due to its popularity in higher education, there were a number of inventories that stemmed from phenomenographic research (e.g. Approaches to Studying Inventory (ASI), Entwistle and Ramsden, 1983; Study Process Questionnaire (SPQ), Biggs et al., 2001; Approaches and Study Skills Inventory for Students (ASSIST), Entwistle, Tait, &

McCune, 2000). However, there has been a distinct lack of critique of these tools and the related methodology in the literature. Mogashana et al. (2012) critically interrogate the results of the ALSI. They held in-depth interviews with 10 of the 80 students who completed the ASI, asking them to elaborate on their responses. The analyses of these interviews highlighted a range of contradictory responses which highlighted the difficulties in interpreting the inventory, particularly when used in a culturally diverse classroom. As reported in the previous chapter, Haggis (2003) explores problems with the assumptions regarding relationships between conceptions of learning, perceptions of the learning environment, approaches to learning, and learning outcomes. She suggests that higher education should find alternative means of conceptualising its core values and activities.

3.3. Research Design

Phenomenography as a research methodology was attractive as it provided an empirical approach to studying the qualitatively different ways students experience learning. Gathering data from a cohort of students which could be further unpacked through discussion with a smaller group seemed the most viable approach to this study. This research, therefore, adopts a mixed methods approach using both qualitative and quantitative methods. Discourse between researchers defining themselves as either qualitative or quantitative has often been fraught; hence there is much criticism in the literature regarding a mixed methods approach (e.g. Bazeley, 2004; Symonds and Gorard, 2008). Others, such as Brannen (2005), view mixed methods as an opportunity that deflects attention from theoretical work, encouraging creative thinking, a practice which should be welcomed in educational research. As Hammersley (2005) highlights, combining different methods makes the assumption that there is a reality to be captured. As he argues, if there is no meeting point between epistemological assumptions there is certainly a need for dialogue.

Brannen's (2005) paper discusses opportunities and risks of mixed methods research in the Social Sciences, in which she highlights Hammersley's (2000) argument that developing a mixed method strategy fits with the political practical enquiry that is recognised by policy-makers and helps inform practice. With an increasing requirement of researchers to meet the needs of research stakeholders, mixed method approaches are increasing in popularity, as they feed into and evaluate evidence-based policy (Teddlie

& Tashakorri, 2003). Brannen (2005) does, however, add that "practical relevance should not substitute theoretical relevance" (p. 6). She also makes reference to the increased emphasis on the dissemination of research, with researchers having to understand the technical language of research as well as being able to communicate outcomes in a simple message. Mixed methods researchers, because of their familiarity with both words and numbers, have a communication advantage over purely qualitative or quantitative researchers. This advantage extends to the ability to use different analyses to meet the needs of different editorial policies in different academic journals, increasing their opportunity for publications, as well as engaging with different stakeholders in different ways.

There are a number of reasons researchers opt for a mixed methods approach. Primarily, the decision is driven by ontological and epistemological assumptions. Qualitative and quantitative research, generally, sit in different paradigms, underpinned by different philosophical assumptions. Another aspect for consideration with regards to paradigm location is the micro/macro level of data required to answer the research question. Researchers working at a micro level are interested in subjective interpretations and perceptions, whereas those working at a macro level are more concerned with trends and patterns. Level and type of explanation as well as philosophical assumptions drive choice of research methods. It is rare that a research project will have only one research question, as most research encompasses several sophisticated questions to meet the overall aim of the project. Mixed methods allow researchers to address questions at both a micro and macro level, strengthening the research outcomes in comparison to purely qualitative or quantitative research. Therefore, much of the methodology literature suggests that the research questions should determine the research methods, with frequency of a phenomenon being better suited to quantitative data but qualitative data are more appropriate for finding out why people engage in certain behaviour. A further pragmatic rationale for mixed methods research relates to the resources available to the researcher, which, indeed, often influence the framing of the research questions.

Research design is, therefore, driven by the research questions, traditions of research in that area, the philosophical underpinning of the researcher, and the pragmatism of the research context. However, the current political context also influences the chosen

methods. The external political context has an impact at institutional, national and international level, on research funding and support (this is further discussed in Chapter 6, section 6.3.1). Mixed methods research supports the current trend for multi-disciplinary work and a growing emphasis on research impact. Social science researchers are often interested in social justice and the voice of minority, often invisible, populations (Mertens, 1998). It is common to draw up large datasets to explore inequalities in the population as well as hearing the individual voices of hard-to-reach groups. Much of the feminist research, which gathered momentum in the 1980s, is responsible for the increasing popularity of mixed methods research (Oakley, 1999). The political rationale has much in common with a pragmatic rationale for opting for a mixed methods research design.

The rationale for employing mixed methods as a research strategy in this project was philosophical, pragmatic and political. As discussed in Chapter 1 (section 1.3.1), the researcher's background is in the field of psychology, studying for a degree in the late 1980s, during which period psychology in the UK was fighting to maintain science funding and experimental psychology was the trend. Therefore, prior to undertaking the Doctorate in Education (EdD), the researcher's experience had been purely quantitative, located in a positivist paradigm. Throughout the taught element of the doctoral programme, the researcher developed a growing interest in interpretivism, adopting the principle that experiences, beliefs and language strongly influence how the social world is conceived. A mixed methods approach to the research design was an appropriate meeting point between these two paradigms, and is also consistent with research in this area.

For this project the researcher wanted to know what a particular population of students understood about learning and how this interacted with academic achievement and cultural background. To explore this in more depth, it was considered that there was a need to hear about students' experiences of learning in higher education. The researcher had access to a group of culturally diverse health science post-graduate students, therefore, pragmatically, a mixed methods design was an applicable approach. Quantitative data on learning conceptions, culture and academic performance could be gathered from the entire cohort and detailed previous experiences of learning lent itself to qualitative data collection through focus group discussions (see section 3.5).

The EdD programme is practically orientated with a focus on applying research and foundational knowledge to real-world organisations. There is an emphasis on developing and evaluating policy and practice relating to educational issues. As discussed in Chapter 1 (sections 1.2 and 1.3), the political context in which the researcher embarked on the programme played a significant role in framing the research questions. Chapter 6 (section 6.3.1) outlines the implications of this work in relation to higher educational policy and related practice. Both the quantitative and qualitative data collected play a major role in shaping the implications, which could not have been identified with a single research approach. Therefore, it was the political context, combined with the research focus, philosophical stance and pragmatics that informed the decision to adopt a mixed methods research design.

Having decided upon a mixed methods design, the ordering of methods had to be considered, that is to say, sequential or simultaneous, followed by the dominance of each method in the research design. In mixed methods research there are a number of possible permutations (see Morse, 2003 for a full discussion). A simultaneous design with the quantitative data dominating the qualitative data was considered the most appropriate design for addressing the research questions in this study. This allowed for a more complete understanding from two datasets as the results from the different methods could be corroborated.

3.4 Participants

As alluded to in the previous section, the researcher had access to students studying in a School of Health and Life Sciences in a post-'92 Scottish university. It is unlikely that students attending this particular university are representative of all students in higher education, an exceptionally diverse population. Nor it is possible to state that students at this University are representative of all health and life sciences students studying in UK, or globally, as different universities offer different opportunities, each of which influence students' decisions to apply for a specific programme at a particular university. The participant selection for the quantitative data is, therefore, considered to be an opportunistic sample. The participants selected for the focus group discussions will be outlined later in this section.

Richardson (1994) explored the literature on mature students' approaches to learning, acknowledging motivational factors and the role of life experience in relation to study

behaviour. In the following two decades there has been little work addressing mature or proficient leaners' understanding and experiences of learning in higher education. Possibly for practical reasons, questionnaire research is conducted with high school children and undergraduate students. As highlighted in Chapter 2 (section 2.2.6), there is very little work which investigates learning conceptions in experienced learners. For this reason, post-graduate students were selected as participants for this research. Because the cultural backgrounds of the students is a key variable in this study, the suite of masters' programmes in health and life sciences was deemed highly suitable. The university in which the data were collected had an international student recruitment policy with a focus on post-graduate programmes, which resulted in the health and life sciences programmes being more heavily populated by non-UK students than home students.

As well as for pragmatic reasons, students studying within the field of health and life sciences are considered to be a valuable group to study as they are an understudied population within educational research. With the exception of medical and undergraduate psychology students, the vast majority of work in the field of learning conceptions and approaches has been conducted on high school children and undergraduate students located in Business Schools. Entwistle et al. (2003) is the only paper cited in Chapter 2, a fairly exhaustive literature review in the field, in which the participants were from a Bioscience programme and recommendations are made for teaching in the health sciences. As discussed in Chapter 2 (section 2.2.5), there are significant disciplinary differences across academic communities' thinking and practices, particularly in their learning and teaching approaches. Although the specific programme of study was not a variable being considered in this research, all students were registered on a programme located in health and life sciences, which share similar learning and teaching practices. Entry qualification for the programmes in the Health and Life Sciences Masters' suite is a good first degree (equivalent to a UK 2:1 or 2:2 with much relevant experience) in a pertinent science discipline. Masters' degrees are twelve-month programmes in the UK with a possibility of a six-month extension. Overall, 156 students (59 men, 97 women), out of a possible 181, from 9 programmes completed the questionnaire (for a full breakdown of programmes by gender, see Appendix I).

Chapter 2 (section 2.3) discusses cultural differences in learning conceptions, including an overview of definitions of culture. Categorising people into social groups is a necessary challenge for social science researchers. This is particularly evident when classifying international students' cultural background. Howarth, Cornish, and Gillespie (2015) argue that researchers should be aware that social categories are perspectival, historical, disrupted by the movement of people and re-constitutive of the phenomena they seek to describe. Post-graduate international students have the resources, financial and psychological, to leave their home country to study abroad. Often such students have previous experience of moving education systems, they may have moved from their home country for their undergraduate degree, which provides them with confidence to study a master's degree in the UK. Their parents may come from different cultural backgrounds, giving them increased cultural understanding and experiences. This further intensifies the challenge of classifying these students into cultural groups.

Over the duration of this project, the nationalities of the students studying Health and Life Sciences Masters' programmes changed significantly. At the outset of this research, the School of Health and Life Sciences had an international policy which focused recruitment for Life Sciences programmes in India, to meet a growing demand (for further detail see Chapter 6, section 6.3.1.2). However, due to the 2012 change in UK visa regulations, there were far fewer Indian students, so the initial proposal to compare Indian students with students from the Middle East had to be reassessed. Due to the number of different nationalities of students in this research, a geographical approach was taken for grouping students into their relevant cultures. The process for categorising students was considered after the quantitative data had been collected and the researcher could access the data regarding nationality, the country in which the student attended high school, the student's first language, the predominant language in the classroom at high school, the country in which the student undertook their first degree, and the language in which their first degree was studied. These data allowed the researcher to appreciate the cultural diversity of the participants. The vast majority (87%) of the student population had attended high school and completed their first degree in the country that they had identified as their nationality (see Chapter 4, section 4.2 for a detailed breakdown of culture and by gender and age). A concise review of national education policies was considered with the geographical location of the

students' home country identifying five separate cultures; North America, Europe, the Middle East and North Africa (MENA), Asia, and Central Africa. North African education systems and dominant religious practices have more in common with Middle Eastern countries than Central African countries, so students from Egypt and Libya were classified together with students from the Middle East, rather than grouping all African students together. The term 'cultural cluster', rather than culture, was given to the cultural grouping of the participants as it is acknowledged that there are many cultural differences within the groups. This is most notable between Chinese and Indian students, who were grouped together in the Asian cultural cluster, and between Eastern and Western European students, who were grouped together in the European cultural cluster. A full breakdown of the participants' nationality, country of previous educational experience and the cultural cluster into which they were located can be found in Appendix II.

The purpose of the focus groups was to investigate previous educational experience and to carry out a deeper exploration of students' understanding of the term 'learning' than was possible from the Conceptions of Learning Inventory (Purdie & Hattie, 2002). A rationale for collecting qualitative data from focus groups is provided in section 3.5.2. The focus groups were structured to include a good mix of cultural cluster, gender and programme of study to encourage a diverse discussion around the comparing and contrasting of learning experiences. For pragmatic reasons, a mix of demographics was considered to be more valuable rather than grouping students with similar characteristics, as suggested by a number of authors (e.g. Krueger, 1994), and is, indeed, more common in focus group research. Due to time constraints, a focus group for each of the five cultural clusters was not possible and students were being encouraged by the programme leader to mix with students from other cultural backgrounds early in their programme to prevent the development of cultural silos. It was also considered that discussion in diverse groups would flow more easily as they compared their different previous experiences in education. The focus groups were held three weeks after students had completed the questionnaire. The final question in the questionnaire was: "Would you be willing to participate in a focus group (a one-hour discussion with the researcher and four other students) early in November to further explore conceptions of learning?" From those who agreed (n = 49) to participate in a focus group, a convenience sampling method was implemented. Six students were

invited by email to attend each of the three groups, and the target number of students for each group was five (see Appendix III for a copy of the invitation email; see Appendix IV for a breakdown of students invited to participate in the focus groups by programme, gender and nationality). There is some debate in the literature regarding the appropriate number of participants in focus group research; Krueger and Casey (2000) suggest between six and eight participants, but some researchers have used up to fifteen people (Goss & Leinbach, 1996) or as few as four (Kitzinger, 1995), arguing that a smaller group reaps richer data. For the purpose of this research, a total of four or five was considered an appropriate number, as English was not the first language of many of the students and hearing the voices of all participants may be difficult with a larger number. Six were invited to each group as it was anticipated that one or two students would not show up.

Three focus groups were considered to be appropriate as it was a manageable number for the researcher within the time constraints and data from between twelve and eighteen students would cover all the cultural clusters, students of both genders, and students from across all the programmes in the master's suite. However, only two students attended the first focus group, three attended the second group, and five attended the third focus group. This was not detrimental, rather, it was possibly advantageous as many rich data were gathered from the focus group discussions (see Chapter 5). There was a good cross-section of programmes represented, as all cultural clusters were represented except for North America and, of the ten students, two were men (for a detailed breakdown of focus group participants by nationality, previous educational experience, cultural cluster, age, gender and programme of study, see Appendix V).

3.5 Data Collection Tools

The mixed methods design adopted in this research applies to all three research questions. Some mixed methods studies answer one question using quantitative analyses, from a questionnaire or survey, and addresses another research question through qualitative analyses. Data collected to answer the research questions in this study came primarily from the Conceptions of Learning Inventory (Purdie & Hattie, 2002) and, to address research question 2, from students' academic achievement, represented by their mean course mark in the first trimester (see Chapter 4, section

4.6.1). These quantitative data were elaborated, complimented and contradicted by the focus group discussions (see Chapter 5). As reported in section 3.3, a simultaneous design with the qualitative data dominating was deemed appropriate. However, the questionnaire was completed three weeks prior to the focus group discussions so that suitable participants could be identified from this data for the focus groups (see section 3.4).

3.5.1 Conceptions of Learning Inventory

There are numerous instruments which measure students' conceptions of knowledge and learning, learning orientations, study behaviour, approaches to learning, and regulation and processing strategies and students' perceptions of, and preferences for, different kinds of learning environments (see Chapter 2, section 2.2 for a detailed discussion). For the purpose of this research the focus was on how students conceive learning, although this is closely related to how they approach learning. Given the cultural diversity of the participants in this research, it was important to the researcher that the chosen instrument had high validity and reliability scores across national boundaries and had been used with culturally diverse populations. Following a thorough review of available instruments, the Conceptions of Learning Inventory (COLI) (Purdie & Hattie, 2002) was one of the few tools measuring learning conceptions that has been used in culturally diverse classrooms and has been used to explore learning conceptions across cultures.

In earlier work, Purdie et al. (1996) identified nine conceptions of learning which were utilised as the basis for the development of the COLI (2002). They constructed a six-point scale, 112-item, inventory which was completed by 250 high school children in Australia, factor analysed, and then reduced to a 45-item inventory. This was then completed by another 331 high school students, the factor analysis was repeated, further reducing it to a 32-item inventory. Examination of various combinations of the bank of 45 items found that their original nine-factor model did not statistically fit the data well. The model that could be clearly interpreted theoretically and was considered a best fit was the 32-item inventory, which was used in this research. Six learning conceptions: gaining information; remembering, using and understanding information; learning as a sense of duty; learning as a personal change; process not bound by time or place; and learning as the development of social competence, were identified from their 32-item

COLI. Purdie and Hattie (2002) unsuccessfully attempted to extract surface and deep learning as two higher-order factors, but the inter-correlations between the factors were high, indicating one higher-order factor, which they considered to be 'learning'. Using the COLI, the authors went on to explore learning conceptions across cultures (for a detailed discussion see Chapter 2, section 2.3)

The COLI is open and available online and has been used in several research studies over the last fifteen years, in a variety of cultures. It is a suitable length, taking about 15 minutes to complete, making it manageable and efficient. The COLI was, therefore, deemed the most appropriate tool for this research. As with all Likert (1932) scale questionnaires, acquiescent response style, particularly the tendency to systematically agree rather than to disagree with the items, is a concern. The COLI does not include a combination of positively and negatively coded items, a strategy often adopted to prevent acquiescent response style. There is some evidence which suggests that the level of acquiescence is different on positively and negatively coded items therefore the downward bias on negative items does not outweigh the upward bias on positive items (McClendon, 1991). As a number of participants in this research did not have English as a first language, a combination of positively and negatively coded items could have been confusing. Acquiescent response style is further addressed in chapter 4, section 4.5.At the outset of this research the researcher considered including studying habits and preferences for teaching as additional variables to compare across cultural clusters and to investigate the relationship with learning conceptions. These additional data were not incorporated into this thesis but will be used for future publication. The questionnaire also asked for the following demographic details: student matriculation identifier number, programme of study, nationality, age, and previous education (see Appendix VI).

3.5.2 Academic Achievement

Accessing academic achievement or academic performance data from a large cohort of students is often a challenge for researchers in UK due to data protection concerns. Often researchers use self-assessment of achievement but this can be problematic for a number of reasons, for example, authors rarely report at which stage of the course students are self-assessing their achievement (for a detailed discussion see section 5.3.1). It has been argued that there is a correlation between students' predicted

performance and their actual academic achievement (Richardson, Abraham, & Bond, 2012). To explore this relationship and to enrich the data for the second research question in this study, when completing the COLI, students were asked to predict how they will perform in their first trimester. To ensure they were familiar with the grading process, they were provided with the University's standard post-graduate marking criteria (see questionnaire, Appendix VI) and asked to provide a numerical value as a prediction of the average of the final marks of the three courses they undertook in their first trimester.

The researcher had access to student records and, with ethical approval granted, and participants' agreement, students' course records could be added to the dataset. Some consideration was given to what should be included in categorising academic achievement. In optimum conditions, students' performance at the end of their master's programme should be considered as their actual academic achievement but, due to time constraints, this was not possible. Taking academic performance for one individual course was not considered appropriate as often students who generally do well will fail one course. It was then decided that is was most appropriate to use the mean for the three courses that the students took in their first trimester. Following completion of the first trimester, these data were added to the dataset and matched by the students' matriculation numbers, which they provided when they completed the COLI.

3.5.3 Focus Groups

There are a number of different methods for collecting qualitative data, but for the purpose of this research, focus group discussions were considered to be the most appropriate, for a number of reasons. As previously stated, the purpose of gathering qualitative data was to investigate previous educational experiences and to carry out a deeper exploration of students' understanding of the term 'learning' than was possible from the COLI. The students in this research were new to their programme and most of them had only recently arrived in the UK and were, therefore, unfamiliar with the environment and expected social norms. It was considered that the social gathering and interaction of a focus group would promote discussion and encourage students to talk openly, rather than an individual interview situation in which the student may be more likely to tell the interviewer what he or she thought the interviewer wanted to hear. In comparison to individual interviews, which aim to obtain individual experiences, views

and attitudes, focus groups extract a range of attitudes, beliefs and feelings within a group context. Kitzinger (1995) argues that interaction between participants is the essential characteristic of a focus group because the interaction highlights participants' beliefs, feelings and experiences of the phenomenon. The interaction also enables participants to ask questions of each other, as well as to re-evaluate and reconsider their own understandings of their specific experiences. Students asking questions of one another was a central feature of the focus groups in this research. Academic staff in the university had been asked to encourage social situations in which students from different cultural backgrounds could interact during the early weeks of their culturally diverse programmes. Focus groups neatly met this objective.

According to Morgan and Krueger (1993), focus groups are particularly useful when there are power differences between the participants and decision-makers or professionals, which are clearly evident in this research. The power difference between students and academics is greater for international students than it is for home students in the UK (for detailed discussion see Chapter 5, section 5.4.1.3). Focus groups are also considered to be expedient when the researcher wants to explore the degree of consensus, as was the aim in this research, on a particular topic (Morgan & Krueger, 1993).

Preparing participants for the focus group is important to allow a fuller and deeper discussion. Incentives, monetary or food, are often used (Bloor, Frankland, Thomas, & Robson, 2001) to encourage participants to attend, fully engage in the group and prepare for the discussion. Participants who are unprepared can alter the group dynamics. Given their status, post-graduate international students early in their programme, the students were likely to be apprehensive and unclear of the parameters of attending a focus group, therefore, along with the invitation email (see Appendix III), a list of conceptions of learning was also sent. The list of Purdie et al.'s (1996) conceptions was chosen as it was the original foundation of the COLI, and it was considered that presenting the students with nine learning conceptions provided more substance for discussion. This allowed students to prepare their thoughts and feel more confident about the content of the discussions, encouraging them to attend.

Activity-oriented questions, which are encouraged by Morgan and Krueger (1998) as 'questions that engage participants' and are described by Bloor et al. (2001) as

'focusing exercises', provide an engaging way of eliciting answers and promoting discussion. Colucci (2007) suggests that an activity might be especially helpful for participants who are less comfortable with immediate verbal responses and need additional time for thinking or communicating their thoughts. This is particularly relevant for the students in this research as, for many of them, English was not their first language. An activity-orientated question would, therefore, allow participants time to reflect and prepare their response in English. During the focus group, Purdie et al.'s (1996) nine conceptions of learning were ranked in order of importance by each participant (see Appendix VII). This generated much deep discussion about the relevance of each learning conception. In addition to the activity-oriented question, a number of leading questions were prepared by the research to guide and probe the participants through the discussion, to elicit the required information (see Appendix VIII).

To ensure all participant voices are heard, the role of the researcher (Krueger, 1994) in a focus group is key. An individual interview is easier for a researcher to control than a focus group in which one or two participants may dominate the discussion. This was particularly evident in this research, as some participants had greater proficiency in English, and those who had poorer English language skills tended to make less contributions to the discussion, until the researcher specifically asked them to share their views and experiences. The researcher was an experienced university teacher and could confidently manage small group discussions in which one or more student dominated.

Focus group data, as with questionnaire data, must be subject to criteria to judge the credibility of the research. Silverman (2006, 2013) argues that if qualitative research is to be judged based on whether it generates valid knowledge then the research must be subjected to rigorous critique. The terms reliability and validity are generally associated with quantitative research and have been rejected by some qualitative researchers, alternative terms have been introduced to qualitative research such as credibility and dependability (Lincoln & Guba, 1985). Others (e.g. Robson, 2011) argue that altering terminology questions the reliability and validity of qualitative research. Reliability is concerned with consistency or stability of the data collection procedures and results, while validly refers to the credibility of the research, is the

researcher is measuring what was actually intended to be measured (Long & Johnson, 2000; Ritchie, 2014)? Threats to reliability and validity are issues that require much consideration in all research.

One of the key motives for opting for a mixed methods methodology was to enhance the rigour of the data set as a whole. The combination of quantitative questionnaire data supported by focus group data, from the same participants, enhanced the trustworthiness of the end results. The validity of the COLI is addressed in section 3.5.1. Following much consideration it was not considered viable to provide full verbatim transcriptions of the three focus groups. However to ensure validity of the qualitative data, a strict regime of listening to and reporting the data was implemented. The researcher listened repeatedly to the discussions, initially identifying key issues. The focus group discussions were considered after the quantitative analyses had been conducted, the intention being, the focus groups were secondary to the questionnaire data, to establish if different methods supported or questioned the survey analysis. Key issues that were raised in the focus groups were colour coded into themes. The data was left for a period then revisited to ensure credibility. Once themes from the focus groups had been identified they were considered against the outcomes from the quantitative analyses, reported in chapter 5. The aim was to ensure the robustness of the overall methodology by applying documented procedures for the different elements of the data collection and analysis to ensure reliability and validity of the survey data and the credibility of the focus group data. Section 3.7 outlines the procedure of this study detailing the process for gathering the qualitative and quantitative data.

3.6 Ethical considerations

As a psychologist, the researcher must adhere to the British Psychological Society's Code of Conduct (2009), with the underlying key principles of respect, competence, responsibility and integrity. However, ethical permission for this research was granted by the School of Education's Ethics Committee at Stirling University in October 2014 (see Appendix IX). The ethics committee is guided by the British Educational Research Association's Ethical Principles for Educational Research (BERA, 2011). Within these guidelines the researcher has a responsibility to the participants by ensuring voluntary informed consent and no harm. Prior to quantitative data collection the researcher informed the students of the rationale and procedure for the research (see Appendix X)

and asked students who were willing to complete the questionnaire to stay in the classroom, allowing those who chose not to participate to leave. Students were told that they had the right to withdraw at any time without providing an explanation and that their participation in this research would have no implications for their programme of study as their lecturers and tutors would not know whether they participated in the research. All participants were adults, none of whom were considered to be part of a vulnerable group. Participants were not required to complete every question, but if they chose to provide their student matriculation number they would be giving up their right to anonymity. However, they were assured that the only person who would have access to this data was the researcher and her supervisors, who were located at a different university. Students were assured that they could not possibly be identified from the results of the research.

Prior to the focus groups, the researcher reiterated the purpose of the research and informed students that the gender, age and cultural background of students in the focus groups would be reported in the results, and permission was sought for recording the discussion. There was no incentive for students to participate in a focus group other than to engage in conversation with fellow students. Refreshments were provided, but students were not aware of this when they initially volunteered, by responding to the invitation item in the questionnaire.

Several authors discuss the power differences between participants and researchers in qualitative research (e.g. Morgan & Krueger, 1993). This was addressed by assuring the participants that the researcher had no connection to their programme nor could she influence any of their lecturers, and that their agreement to participate would not be discussed with any other student or member of staff in the university.

In relation to data protection, all quantitative data were collected online, with students' assessment marks added to the dataset after the first semester marks had been ratified. After students' academic performance was added to the dataset and double-checked, students' matriculation numbers were deleted from the dataset so they could not be identified. Quantitative data were stored on the university server which is password-protected. The researcher's laptop computer, which held details of students who were invited to participate in the focus groups, is encrypted, preventing any unauthorised access to the personal information of participants. These details were also held on the

university server. No one other than the researcher had access to the dataset. Focus groups were recorded on an Olympus VN-741 4GB Dictaphone, and they were backed up on three separate CDs. The CDs were stored in a locked cupboard in the university. The Dictaphone was stored in a locked cupboard in the home of the researcher during the data analysis period, following which it was returned to a locked cupboard in the university.

3.7 Procedure

The twelve-month masters' programmes begin at the end of September. It was important, to prevent teaching and learning approaches on their UK master's programme strongly influencing their conceptions of learning, that data were collected as early as possible in the programme. To ensure maximum student engagement with the research project, the researcher gained access to the students during a timetabled class. All students registered on the suite of masters' programmes undertake a research skills course in their first trimester, and students are allocated to one of eight classes, which are held in a computer room with each student having access to a desktop computer. The classes were held at various times across the week, and only two classes were held simultaneously. This was managed by the researcher moving between the two classrooms. Permission was granted to access students in this course in week three of the trimester. The researcher went to all eight classes, introduced herself and explained the purpose of the research project (see Appendix X). It was emphasised that the only reasons students were being asked for their student matriculation identifier was to access their email address if the student agreed to participate in a focus group, and to match the COLI data with their academic performance at the end of the first trimester. After this the student identifiers were removed from the dataset to ensure anonymity. Student consent was then sought, and students who did not agree to participate in this research left the classroom after the introduction and explanation. There were 181 student registered on the suite of masters' programmes; 156 completed the questionnaire, and 25 students were either absent from class on that day or did not consent to participate in the research. Using the desktop computers in the classroom, consenting students logged on to the SurveyMonkey® website which supported the questionnaire (see Appendix VI). Students were encouraged to identify themselves to the researcher if there were any terms in the questionnaire they did not understand. These were then explained to the student. The email address of the researcher was

provided for all participants in the event that they wanted to raise any issues, discuss any points about the research, or withdraw from the study at a later date. Once students had completed the online questionnaire they left the room as class had finished. There was quite a variation in the time that it took the students to complete the questionnaire; between 12 minutes and one hour, however, there was no set time limit.

Data from the SurveyMoney® website were exported to SPSS once all data had been collected from all eight classes. Academic achievement was later added by taking the mean mark of the final scores from all three courses that each student undertook in their first trimester. These courses varied depending on the programme in which the students were registered. Academic achievement was added to the dataset by using the student matriculation identifier provided when they completed the questionnaire. Drawing upon Morse's (2003) possible permutations of research designs, the quantitative data were dominant in this research, with the qualitative, which was collected three weeks after students had completed the questionnaire, used to augment and, in some areas, question the quantitative findings. Quantitative data were not analysed until after the focus groups had taken place, indicating a simultaneous design. However, the questionnaire had to be completed and collected to allow for participant selection for the qualitative data collection stage.

Recruitment of participants to the focus groups was fairly straightforward as 49 of the 156 students who completed the COLI indicated that they would be willing to participate in a focus group. Gender, programme, nationality and cultural cluster were taken into consideration to ensure that there was representation from across the population, providing the best information (see section 3.4). Once the participants had been selected they were invited by email to join a particular focus group; the only incentive to participate was that tea, coffee and sandwiches were provided (see Appendix III). As discussed in the previous section (section 3.5.3), students were also sent Purdie et al.'s (1996) nine conceptions of learning to ensure they had an idea of what would be discussed in the focus groups. It was apparent during the focus group discussions that some students had engaged more with these before the meeting than others (see Chapter 5, section 5.2).

After careful consideration, six students were selected to attend each of the three focus groups. Two focus groups were scheduled for a Wednesday afternoon and the third on

a Friday afternoon to ensure that the focus groups did not clash with timetabled classes, maximising attendance. A small classroom in an unfamiliar building was chosen for the focus groups to minimise noise disruption, as there was building work taking place in the Health and Life Sciences' building. The room was set up with a table surrounded by seven chairs, and the lighting and temperature were pleasant. Tea, coffee, water, a selection of sandwiches and cakes were available on another table. A tape recorder was set up in the middle of the table. There were three A3 sheets of paper printed with Purdie et al. (1996) nine conceptions of learning on the table. These learning conceptions were not presented in a list format but displayed at random on the page to prevent the students from thinking that there is a hierarchical order of importance (see Appendix V11a). Six marker pens were also on the table.

Only two students came to the first focus group as, unbeknown to the researcher, a formative assignment was due the following day, resulting in students not prioritising the focus group discussion. Three students attended the second group and five students attended the third group. There was some consideration regarding holding an additional focus group, but the data generated from the smaller than anticipated groups were considered to be rich enough without holding a fourth group.

On arrival, students were invited to help themselves to the refreshments provided. The researcher thanked the participants for attending, introduced herself, outlined the purpose of the focus groups, set some ground rules and sought permission for the tape recorder to be switched on. The researcher began the focus group with an engagement question, asking the participants to share with the group, their nationality, where they went to high school and the country in which they completed, and the subject of, their first degree. The discussion was then moved on by the researcher, who used more open-ended exploratory questions to investigate learning experiences in their undergraduate degrees (see Appendix VIII for the list of probes and questions). Once all participants had shared their educational experiences the group activity was introduced. Each participant was given a pen and asked to rank the learning conceptions; students shared an A3 sheet (see Appendix VII). Three A3 sheets of papers with the Purdie et al. (1996) learning conceptions were provided so all students, who were sitting around three sides of a square table (two sides in group1), had clear access to at least one of the sheets. When introducing the activity the researcher asked

students to rank the learning conceptions in order of importance to them while pointing to one of the A3 sheets, emphasising that there was no right or wrong responses. In groups 1 and 2, without being instructed to do so, the students all completed their ranking on the same A3 sheet of paper, to which the researcher had pointed. In group 3, to ensure continuity across the groups, students were asked to all use the same sheet of paper for their ranking (see Appendix VIIb, VIIc & VIId). Students generally completed this exercise in silence, although some students read the learning conceptions aloud to themselves and a couple made statements such as '*I don't think learning is a duty*' or '*learning is all of these things to me, it is difficult to say which is more*'. The researcher did not respond directly to such comments. Although one student commented it was challenging, no student objected or indicated they could not reach a conclusion. All students completed the activity at about the same time, following which the researcher asked them to tell the group about their choice of ranking. This led to a deep discussion about the participants' understanding of learning, which included reflections on assessment practices, creativity, criticality, and independent thinking. All three groups also raised the issue of relationships with teaching staff (see Chapter 5, section 5.4.1). Students were keen to share their experiences and views. Keeping the discussion going was not difficult, particularly in groups 2 and 3. Some oral interjections by the researcher were used to keep discussions on track and to prevent students from digressing and discussing instances from a particular class which were not deemed relevant.

After an hour the researcher drew the discussions to a close by asking the students whether they had anything more to add about their experiences and conceptions of learning. The researcher's contact details were provided so that the participants could get in touch if they later felt that they had missed some pertinent points. The participants were thanked again and the tape recorder was switched off.

3.8 Rationale for Data Analysis

As cited by Bryman (2007), a mixed methods approach requires particular consideration at the research design stage and then again during data analyses and interpretation. During data interpretation, ontological, epistemological and theoretical issues are highlighted, therefore, linking the two datasets is often problematic. Creswell and Plano Clark (2007), in their definition of mixed methods research, discuss mixing the datasets,

which provides a better understanding of the phenomenon. They suggest that there are three ways of mixing the data: merging the data, by bringing the qualitative and quantitative datasets together; connecting the datasets, by having one build on the other; and embedding the data, where one dataset plays a supportive role for the other. Chapter 4 reports the outcomes of the quantitative data of this research and Chapter 5 connects the qualitative data to the findings reported in Chapter 4.

3.8.1 Descriptive Statistics, differences tests and correlations

In Chapter 4, descriptive statistics describe the population of students in this research, providing the reader with a clear impression of the participants. As alluded to in section 3.4, these students are not necessarily representative of all health and life sciences students studying on a master's programme in the UK or globally. Therefore, detailed reporting of the participants' demographics is crucial to contextualise the outcomes; another population of students may have yielded different results. Descriptive statistics are also reported for presenting each of the cultural clusters' scores for all of the learning conceptions. To compare gender in predicted academic performance and actual academic achievement, independent *t*-tests were implemented as this is a widely accepted statistical difference test with small sample sizes, testing the difference between the samples when the variances of two normal distributions are not known. When comparing differences across cultural clusters an analysis of variance (ANOVA) test was used to reduce the probability of making a type I error. ANOVA tests were also applied to cultural clusters and academic achievement, and cultural cluster and forecasted performance. To explore the relationship between forecasted academic performance and actual academic achievement, the Pearson correlation coefficient was implemented as is the most widely used test to measure the strength of the linear relationship between normally distributed variables.

3.8.2 Factor Analysis

As previously reported, the COLI (Purdie & Hattie, 2002) was used to quantitatively measure the students' learning conceptions. Although this is a well-defined and regularly used measure across different cultures, the participants' demographics in this research were quite different from other studies using the COLI. The researcher wanted to ensure that the items loaded onto the same factors as in Purdie and Hattie's (2002) research. This could have been tested by using confirmatory factor analyses, which

uses knowledge of the theory and empirical research to test that the relationship between the 32 items and their underlying latent constructs, the six conceptions of learning, exists. However, after much consideration, exploratory factor analysis was considered to be more appropriate as it allows all of the 32 items to load freely without constraints. This resulted in eight conceptions of learning which were slightly different from Purdie and Hattie's (2002) conceptions. The eight conceptions of learning that derived from the factor analysis conducted in this research were labelled, compared to Purdie and Hattie's, and used for further analyses.

3.8.3 Regression Analysis

To understand whether any of the newly identified learning conceptions could predict academic achievement or predict how students forecasted how they would perform, multiple regression analyses were applied. Typically, a regression analysis is used for modelling the relationship between two or more variables. The data met all the assumptions required for multiple regression, therefore regression analysis was deemed the most appropriate for exploring relationships between cultural clusters, learning conceptions, academic achievement and predicted academic performance.

3.8.4 Focus Group Activity

Due to the small sample of participants who participated in the focus groups (see section 3.4), multivariate statistical analyses were not applied to evaluate the focus group activity. However, as numerical ratings were compared across participants, these results are included as basic descriptors in Chapter 4 (section 4.7).

3.8.5 Focus Group Discussions

Triangulation of the data in a mixed methods research design, referring to the corroboration of the results, is, according to Hammersley (1996), only one method of combining results. One dataset, either quantitative or qualitative, can elaborate or expand the other, adding to our understanding of the phenomenon. However, both datasets can be treated independently, sometimes generating different outcomes which are contrasted, resulting in a wider viewpoint. Alternatively, researchers may find that the two analyses contradict one another, leading to further research or a critical evaluation of one or both of the research methods. Finally, mixed methods may be chosen as the first method which could generate new research questions or hypotheses

which can only be pursued by an alternative method. All these forms of data triangulation make the assumption that there is a reality to be captured. As noted in the procedure section (section 3.7) above, the qualitative data were collected after the questionnaire but prior to performing the quantitative analyses, with the quantitative data being dominant in a simultaneous design.

There is a vast literature on the variety of qualitative analyses used for scrutinizing focus groups, some of which was considered for this research. However, due to resource implications, predominantly the time constraints and scope of an EdD thesis, data from the focus group discussions in this research were not formally coded. This, therefore, did not require a full transcription of the discussions. This could be considered a threat to the trustworthiness of the data analysis. However, the caution taken over recurrently listening to the recordings, ensuring that all points made by the participants were noted to avoid cherry picking statements, promoted rigour in the qualitative data analysis. The researcher listened to the discussions repeatedly over a three-month period, noting themes and issues highlighted frequently by different participants. It was easy to identify the students when listening to the recordings of the three focus groups discussions due to the cultural differences in their accents. The data were left for a month and then revisited, again noting dominant themes and pertinent points. Relevant points were extracted and are presented in Chapter 5, contributing to the discussion of the quantitative analyses presented in Chapter 4. Chapter 6 goes on to discuss the implication of the findings.

3.9 Summary of Chapter 3

This chapter begins with a summary of phenomenography as a methodological underpinning for the research. Unlike other research perspectives, phenomenography does not make any assumptions about the nature of reality, but it assumes that conceptions are the product of an interaction between people, that is to say, students, and their experiences with the external world, that is to say, learning. This methodology, combined with the researcher's background, as reported in Chapter 1, and the relevant literature, as summarised in Chapter 2, led the researcher to opt for a mixed methods design.

This chapter then went on to provide a rationale for combining the methods during the research process. The quantitative data, which were gathered through a widely accepted

questionnaire, the Conceptions of Learning Inventory (Purdie & Hattie, 2002), is the dominant dataset, which was collected simultaneously to the qualitative data, which was collected in the form of three focus groups. Following the justification for the chosen data collection tools, the procedure for the quantitative data collection and focus groups was reported in detail, with consideration of the ethical implications. The final section provided a rationale for the quantitative analyses and focus group activity, which are reported in Chapter 4, and the triangulation of the data, which is considered in Chapter 5.

Chapter 4: Results

4.1 Introduction to Chapter 4

This chapter gives an account of the main findings from the research. At the outset, the descriptive statistics are reported, outlining the key demographic details of the population of students who participated in this research. The following section reports the predicted and actual academic performance of the participants. An exploratory factor analysis, which was conducted on Purdie and Hattie's (2002) Conceptions of Learning Inventory (COLI), identifies eight learning conceptions from this study. The factors derived from this analysis are compared to the factors that were identified by Purdie and Hattie (2002). The mean student responses for each learning conception are compared across the five cultural clusters and a correlation matrix explores the relationship between the conceptions of learning factors, cultural cluster and academic performance (both predicted and actual). The relationship between these variables is further explored by regression analysis, which identifies key factors that predict perceived academic performance. The outcome of the activity that was carried out in the three focus groups is then reported. The final section of this chapter summarises the main quantitative findings, emphasising a number of points which will be critically discussed in relation to the qualitative analysis in Chapter 5.

4.2 Descriptive Statistics

All participants were students registered on various taught post-graduate health and life sciences programmes at a Scottish post-'92 university. A rationale for selecting this population is provided in Chapter 3 (section 3.4). The following paragraphs provide some descriptive statistics which quantitatively illustrates the basic features of the participants.

The group of 156 participants was made up from thirty-two nationalities (for a comprehensive breakdown see Appendix II). Taking into consideration geographical location and common characteristics of national educational systems (see Chapter 3, section 3.4), the participants' nationalities were categorised into five clusters, which have been identified for the purpose of this research as cultural clusters (see Table 4.1 below). The gender breakdown of the population in this study (women n = 97, 62.18%;

men *n* = 59, 37.82%) represents national statistics for students studying taught post-graduate programmes in the field of health and life sciences in the UK in 2015 (Biological Sciences 68% women, 32% men; subjects allied to Medicine 76% women, 24% men) (Higher Education Information Database for Institutions, 2015).

One student (a woman) did not clearly state her nationality and was therefore omitted from any analyses that included culture as a variable. Data from this participant were, however, included in all other analyses. The age of the participants ranged from 21 to 57, with a mean of 28 (sd 5.897).

Table 4.1: Cultural clusters and gender from dataset

Cultural cluster	No. (%) of participants	Mean age (sd)	Gender	
			Men	Women
North America	12 (7.7%)	24.67 (sd 1.16)	3	9
Europe	58 (37.2%)	28.16 (sd 7.14)	21	37
MENA[1]	28 (17.9%)	29.73 (sd 4.81)	13	20
Asia	28 (17.9%)	26.26 (sd 4.46)	9	15
Central Africa	29 (18.6%)	28.96 (sd 5.90)	13	15
Not clearly identified	1	34 (sd n/a)	0	1

To appreciate the previous experience of national education systems experienced by the sample, the questionnaire asked participants in which country they had undertaken their secondary education and first degree. Most (87%; *n* = 136) of the participants had attended secondary school and completed their first degree in their home country (identified as their nationality); 10.9% (*n* =17) of participants moved from their home country to study their first degree, while only seven (4.5%) of those moved geographical cluster, and the remaining 10 (6.4%) moved to another country within the same cluster. Seven (4.5%) participants attended secondary school in a country which they did not identify as their nationality; five (3.2%) of those were schooled in a country located in a different geographical cluster from their identified nationality. Forty-seven (30.1%) participants reported that they followed an international programme of study at

[1] MENA - Middle East and North Africa

secondary school, with 107 (68.8%) participants reporting that English was the predominant language in the classroom at secondary school. One hundred and twenty-seven (81.47%) participants studied their first degree in English. One hundred and ten (70.5%) participants had not previously experienced a UK education.

4.3 Academic Performance

One of the main purposes of this research is to explore a group of culturally diverse, post-graduate science students' conceptions of learning in relation to their predicted and actual academic performance. Predicted academic performance was measured by asking students within the first three weeks of their programme how they thought they would perform, by averaging the final mark of the three courses they would be taking in the first trimester. To ensure that students were familiar with the grading process they were provided with the university's standard post-graduate marking criteria (see questionnaire Appendix VI) and asked to provide a numerical value as a prediction of the average of the final marks of the three courses they undertook in their first trimester (this variable was named 'perceived mark'). Actual academic performance data were available following the assessment meeting that ratified their first trimester marks. The mean mark for their three courses was added to the dataset (this variable was named 'actual mark'). Table 4.2 below shows perceived and actual marks for each cultural cluster. One student, a 29-year-old man from Saudi Arabia (MENA cultural cluster), did not complete the questionnaire and did not predict his mark for the first trimester, hence the number of actual marks was greater than the number of predicted marks for MENA. Three students failed to respond to the question asking the participants to predict their mark (perceived mark, $n = 153$). Seven students' actual marks were not available as they either dropped out of their programme prior to completing the first trimester or their mark was not in the university student system at the point of final data collection due to an academic discrepancy (actual mark, $n = 149$).

There were no gender differences in either perceived mark ($t = 0.66$, df = 151, $p = 0.511$, 2-tailed) or actual mark ($t = 0.45$, df = 140, $p = 0.656$, 2-tailed), contrary to the literature, which suggests that, generally, men predict that they will perform better than women, whereas, in a number of disciplines, women perform better than men (Huang, 2013).

The literature on self-reported academic performance suggests that it is correlated with actual achievement (Richardson, Abraham, & Bond, 2012). A Pearson's correlation analysis was conducted, and the result shows that perceived mark was not correlated with actual mark at the end of the first trimester (r = -0.026, n = 146, p = 0.751). Further correlations were conducted for each of the five groups, and no relationship was found between perceived and actual mark in any of the cultural clusters.

When comparing perceived academic performance with actual performance, a paired samples t-test found a significant difference between perceived and actual mark, (t = 4.571, df = 145, p = 0.000, 2-tailed). In the third week of their course, students predicted that they would perform better in the first trimester than they actually did. The difference between students' perceived mark and their actual mark was further explored for each cultural cluster. The only two groups which showed a significant difference between their perceived and actual academic mark were MENA (t = 3.171, df = 31, p = 0.003, 2-tailed) and Central Africa (t = 3.624, df = 26, p = 0.001, 2-tailed). Both of these cultural clusters predicted that they would gain a better average mark than they actually achieved in the first trimester of their post-graduate programme. The perceived mark was higher than the actual mark for the European and North American cultural clusters, although the difference was not significant, possibly because of the small sample of North American students. Asian students performed better than they predicted, however, the difference was minimal and not significant. It is interesting to note that all cultural clusters except Asian students predicted that they would perform better than they did at the end of their first semester.

Table 4.2: Perceived and Actual Academic Performance

Cultural Cluster	Perceived Mark			Actual Mark		
	N	**Mean**	**Std Deviation**	***N***	**Mean**	**Std Deviation**
North American	12	64.08	7.22	11	57.21	6.22
European	56	61.79	5.91	55	59.06	12.16
MENA	32	63.47*	7.61	33	56.34	10.25
Asian	24	62.08	6.80	23	62.25	9.30
Central African	28	69.29*	4.24	27	60.86	11.89
Total	152	63.75*	6.80	149	59.14	11.00

There were no differences across cultural clusters for actual academic performance (F (4, 143) = 1.644, p = 0.166). For perceived academic performance, a one-way unrelated ANOVA found a significant difference. A Levene's test suggests homogeneity of the data and the following results were obtained: F (4, 147) = 7.208, $p < 0.001$. Thus, perceived mark was shown to vary across cultural cluster. A post hoc (Tukey) analysis was conducted to investigate this further. This indicated that the students from the Central Africa cultural cluster predicted a significantly higher score (perceived mark) than students from the MENA, European and Asian cultural clusters. Perceived and actual marks will be further reported in relation to learning conceptions in section 4.4.

4.4 Identifying Learning Conceptions

As reported in Chapter 3, this research utilised Purdie and Hattie's (2002) 32-item conceptions of learning inventory. An exploratory factor analysis with a Varimax orthoginal rotation was conducted on the 32 conceptions of learning items within the questionnaire. Exploratory factor analysis was selected as its key objective is reducing a larger set of variables to a smaller set of factors, fewer in number than the original variable set, but capable of accounting for a large portion of the total variability in the items. Using data from Australian high school students (n = 331), Purdie and Hattie (2002) initially employed exploratory factor analyses to examine various combinations of their 45-item instrument (Purdie et al., 1996) in which they originally identified nine categories of conceptions of learning (see Chapter 2, Table 2.1). Their aim was to find

the best fit statistically to the sample data as well as to provide a model that could be interpreted theoretically. Following identification of six factors (see Table 4.4 below) they conducted a confirmatory factor analysis of their conception of learning items. Factor loadings of their six factors for both the exploratory and validation samples were good, resulting in a 32-item Conceptions of Learning Inventory (COLI), which was used in the questionnaire in this research.

Table 4.3: Purdie and Hattie's (2002) factors

Factors			**No. of items**
I	Gaining information	INFO	5
II	Remembering, using and understanding	RUU	9
III	Learning as a duty	DUTY	3
IV	Learning as Personal change	PERS	8
V	Learning as a Process not bound by time or place	PROC	3
VI	Learning as the development of social competence	SOC	4

As identified in the previous chapter (section 3.8.2), confirmatory factor analyses could have been implemented to test how well the data from this research fitted into Purdie and Hattie's (2002) six factors. However, due to the very different demographics of this student population, it was considered best to explore the data in order to identify underlying factor structures without imposing a preconceived structure on the outcome. Unlike confirmatory factor analysis, in exploratory factor analysis all measured variables are related to every latent variable.

4.4.1 Data screening

The factorability of the 32 COLI items was checked for univariate outliers using several well-recognised criteria for the factorability of a correlation. Firstly, it was observed that 31 of the 32 items correlated at least 0.3 with no less than one other item, suggesting reasonable factorability. The data were then screened for missing data, two cases were found to be missing; however, using listwise deletion, the minimum amount

of data for factor analysis was satisfied, with a final sample size of 154. An examination of the Kaiser-Meyer Olkin measure of sampling adequacy suggested that the sample was factorable (KMO=0.846) and Bartlett's test of sphericity was significant (χ^2 (152) = 2442.962, $p < 0.0001$) indicating that it was appropriate to use the factor analytic model on this set of data. The diagonals of the anti-image correlation matrix were also all over 0.5. Finally, the communalities (extraction method: Principal Axis Factoring) were all above 0.3, except the first item ('learning is when I'm taught something that I didn't know about before', 0.253) further confirming that each item shared some common variance with other items. Given these overall indicators, factor analysis was deemed to be suitable with all 32 items.

4.4.2 Factor extraction

A Principal Axis Factor (PAF) with a Varimax (orthogonal) rotation of all 32 Likert scale items from the COLI was conducted on data gathered from 154 participants; two participants did not complete the COLI. The maximum likelihood estimation procedure was used to extract the factors from the variable data. Kaiser's rule was selected to determine which factors were most eligible for interpretation. Eight factors were extracted, which explains roughly 66.6% of all the variable variances (Table 4.4). A plot of the eigenvalues is provided in Appendix XI. This scree plot is slightly ambiguous as it showed inflection, which would justify retaining six factors. However, all eight will be retained, as suggested by Kaiser's criterion, on this value. It is worthy to note that before rotation, most variables load highly on the first factor. The residual values, the differences between the observed correlation coefficients and the ones predicted from the model, are small, with 46 (9%) non-redundant residuals with absolute values greater than 0.05, suggesting a good model.

Table 4.4: Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.09	28.42	28.42	8.706	27.21	27.21	2.95	9.22	9.22
2	2.96	9.26	37.68	2.532	7.91	35.12	2.35	7.34	16.56
3	2.33	7.29	44.97	1.863	5.82	40.94	2.33	7.29	23.86
4	1.84	5.76	50.73	1.496	4.68	45.61	2.18	6.82	30.68
5	1.58	4.92	55.65	1.134	3.54	49.16	2.17	6.79	37.46
6	1.27	3.97	59.62	.814	2.54	51.70	2.12	6.63	44.09
7	1.27	3.86	63.48	.736	2.30	54.00	2.08	6.51	50.60
8	1.00	3.14	66.62	.559	1.75	55.75	1.64	5.14	55.75

Extraction Method: Principal Axis Factoring.

4.4.3 Factor labelling

As the purpose of the above factor analysis was to simplify the complex interrelationships in the Conceptions of Learning Inventory, a descriptive label will be applied to each of the eight factors that best describe the students' understanding of learning. The rotated factor matrix from the output is reported in Table 4.5 below, which shows the 32 items. Factor scores were saved for all identified factors; each of the eight factors were approximately normally distributed, with a mean of zero and standard deviation of 1.

Table 4.5: Rotated Factor Matrix

	Factor							
	1	2	3	4	5	6	7	8
By learning, I look at life in new ways.	.824	.273	.134	.174			.132	
Learning changes my way of thinking.	.803	.146		.238			.144	.149
Learning has helped me to widen my views about life.	.615	.218		.219				.186
Learning means I have found new ways to look at things.	.573	.272	.477		.159	.125		.139
Learning is necessary to help me improve as a person.	.311	.653	.312	.157	.245	.168	.134	
Increased knowledge helps me become a better person.	.313	.640	.127	.119	.232		.235	
When I learn, I think I change as a person.	.347	.597	.122	.241	.153	.103	.225	
I use learning to develop myself as a person.	.371	.568		.189	.253			.348
I don't think that I will ever stop learning.	.229	.327	.147	.272				.291
Learning is making sense out of new information and ways of doing things.	.114	.112	.613	.106		.279		.344
Learning is difficult but important.			.591		.114			
Learning is finding out what things really mean.	.106	.172	.485	.136	.164	.250	.232	.220
Learning means I can talk about something in different ways.	.150		.472	-.115	.143	.137		.278
Even when a learning task is difficult, I must concentrate and keep trying.	.174	.299	.384	.303	-.107		.355	
I learn a lot from talking to other people.	.227	.106	.149	.689			.210	.144
Learning is gaining knowledge through daily experiences.	.198	.126		.632	.150		.167	.340
Learning is knowing how to get on with different kinds of people.	.185	.261		.579	.439		.201	
Learning is not only studying at school/college/university but knowing how to be considerate to others.	.166			.498	.493		.115	
Learning and studying must be done whether I like it or not.		.208		.291		.182		-.219
Learning is developing good relationships.		.219	.263	.189	.800			
Learning is the development of common sense in order to become a member of society.		.145	.114		.779		.112	.190
I should be able to remember what I have learned at a later date.			.227			.714	.210	.104
I have really learned something when I can remember it later.		.195	.273			.642	.167	.223
If I have learned something it means that I can remember that information whenever I want to.	.152	.131	-.169			.571	.411	
When something stays in my head, I know I have really learned it.		.138	.145		.209	.517	.426	
I know I have learned something when I can explain it to someone else.	.119	-.189	.366		.151	.389		.302
When someone gives me new information, I feel that I am learning.	.104			.199			.667	
Learning helps me to become clever.	.213	.179	.106		.178	.163	.546	
Learning is taking in as many facts as possible.			.198		.154	.131	.544	
Learning is when I'm taught something that I didn't know about before.			-.127			.128	.376	.228
If I know something well I can use the information if the need arises.	.168		.194	.210		.163	.156	.594
When I have learned something, I know how to use it in other situations.	.210		.253	.110	.132	.317		.556

Extraction Method: Principal Axis Factoring.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 17 iterations.

Four items loaded onto factor 1. As can be seen in Table 4.5, all four concepts can be considered as measures related to the latent factor that can link to changes in ways of thinking and broadening outlook. This factor was labelled, 'broadening your horizons' (BH).

Five items loaded onto the second factor, which is related to changing as a person, bettering oneself and lifelong learning. This factor was labelled, 'personal development' (PD).

The five items that loaded onto the third factor are associated with fundamental understanding, grasping new material, and making reference to learning as being challenging. The items in this factor all related to the technical aspect of learning; promoting understanding. This factor was labelled 'making sense' (MS).

Four items loaded onto the fourth factor, all of which were associated with the relational aspect of learning and learning through experiences outside the classroom. This factor was labelled, 'social interaction' (SI).

The two items that loaded onto factor five are 'developing good relationships' and 'developing common sense to become a member of society'. These two items are associated with the outcomes of the social experience of learning. This factor was labelled 'social outcome' (SO).

There were five items that loaded onto factor six. They all relate learning to remembering information and one item makes reference to being able to explain to others. All of these items could measure learning quantitatively. This factor was labelled 'remembering' (R).

Three of the four items that loaded onto factor seven related to gaining new information, aligning with the concept of learning as acquisition of knowledge. The fourth item was about learning to become clever, which is better positioned in the learning as participation approach. This factor was labelled, 'new information' (NI).

Two items loaded onto the eighth factor, both of which are associated with using information. A third item, 'I know I have learned something when I can explain it to someone else', loaded onto factor 5 (R), but only marginally; its result had 0.087 of a difference. The eighth factor was labelled 'using information (UI).

One item did not load onto any factor; 'learning and studying must be done whether I like it or not'.

4.4.4 Comparison of factors; Purdie and Hattie (2002) and the current study

Purdie and Hattie (2002) identified six conceptions of learning, while the current study identifies eight. The following paragraph provides a summarised comparison of the current conceptions of learning with previously identified factors.

All four items in the 'new information' factor derived from this research were classified into Purdie and Hattie's (2002) 'gaining information' factor. Their fifth item, from 'gaining information', was '*learning means I can talk about something in different ways*', and loaded onto the 'making sense' factor in this study. Purdie and Hattie (2002) had nine items in their 'remember, using and understanding information' factor, five of which correspond to this study's 'remembering' factor. Two of their items, '*when I have learned something, I know how to use it in other situations*' and '*if I know something well I can use the information if the need arises*', mapped onto the 'using information' factor that derived from this study. The other two items, '*learning is making sense out of new information and ways of doing things*' and '*learning is finding out what things really mean*', loaded onto the 'making sense' factor. The other two items that made up 'making sense' in this research, '*learning is difficult but important*' and '*even when a learning task is difficult, I must concentrate and keep trying*', were categorised in Purdie and Hattie's (2002) 'duty' factor. They had only three items in their 'duty' factor; their third item, '*learning and studying must be done whether I like it or not*', was the only item that did not load onto any of the factors derived from this research. The four 'broadening horizons' items mapped onto Purdie and Hattie's (2002) 'learning as a personal change' factor, which included eight items. The other four loaded onto the factor which was named 'personal development' in this study. The fifth item that was included in the 'personal development' factor, '*I don't think I will ever stop learning*' was in the 'process not bound by time or place' factor in Purdie and Hattie's (2002) paper. Two of this study's 'social interaction' items, '*I learn a lot from talking to other people*' and '*learning is gaining knowledge through daily experiences*', were the other two items that loaded into their 'process not bound by time or place' factor. The third and fourth item from 'social interaction' and both 'social outcome' items loaded onto 'learning as the development of social competence in Purdie and

Hattie's (2002) research. The following chapter will provide an in-depth analysis of the similarities and differences in the loadings of the same items as presented in Table 4.6 below.

Table 4.6: Loading of COLI items - Purdie and Hattie's (2002) factors compared with current factor loadings

Item		Purdie & Hattie (2002)	Factors from current study
1	Learning is when I'm taught something that I didn't know about before	INFO	NI
2	Learning is taking in as many facts as possible	INFO	NI
3	When someone gives me new information, I feel that I am learning	INFO	NI
4	Learning helps me to become clever	INFO	NI
5	Learning means I can talk about something in different ways	INFO	MS
6	When something stays in my head, I know I have really learned it	RUU	R
7	If I have learned something it means that I can remember that information whenever I want to	RUU	R
8	I should be able to remember what I have learned at a later date	RUU	R
9	I have really learned something when I can remember it later	RUU	R
10	When I have learned something, I know how to use it in other situations	RUU	UI
11	If I know something well I can use the information if the need arises	RUU	UI
12	Learning is making sense out of new information and ways of doing things	RUU	MS
13	I know I have learned something when I can explain it to someone else	RUU	R
14	Learning is finding out what things really mean	RUU	MS
15	Learning is difficult but important	DUTY	MS
16	Even when a learning task is difficult, I must concentrate and keep trying	DUTY	MS
17	Learning and studying must be done whether I like it or not	DUTY	-
18	Learning has helped me to widen my views about life	PERS	BH
19	Learning changes my way of thinking	PERS	BH
20	By learning, I look at life in new ways	PERS	BH
21	Learning means I have found new ways to look at things	PERS	BH
22	Increased knowledge helps me become a better person	PERS	PD
23	I use learning to develop myself as a person	PERS	PD
34	When I learn, I think I change as a person	PERS	PD
35	Learning is necessary to help me improve as a person	PERS	PD
36	I don't think that I will ever stop learning	PROC	PD
37	I learn a lot from talking to other people	PROC	SI
28	Learning is gaining knowledge through daily experiences	PROC	SI
29	Learning is knowing how to get on with different kinds of people	SOC	SI
30	Learning is not only studying at school/college/university but knowing how to be considerate to others	SOC	SI
31	Learning is the development of common sense in order to become a member of society	SOC	SO
32	Learning is developing good relationships	SOC	SO

Purdie and Hattie's (2002) factors:

INFO	gaining information
RUU	remember, using and understanding information
DUTY	learning as a sense of duty
PERS	learning as a personal change
PROC	process not bound by time or place
SOC	learning as the development of social competence

Factors from this study:

NI	new information
MS	making sense
R	remembering
UI	using information
BH	broadening your horizons
PD	personal development
SI	social interaction
SO	social outcomes

4.5 Participants' Responses to Conceptions of Learning Factors

Following the newly identified conceptions of learning factors, eight new variables were created in the dataset, providing each participant with a mean score for each of the factors (new information, making sense, remembering, using information, broadening horizons, personal development, social interaction, and social outcomes). There was little difference between the mean score of the eight factors (see Table 4.7 and figure 4.1 below). The sample (n = 154) rated statements related to broadening horizons (mean 5.28; sd 0.76) and using information (mean 5.25; sd 0.74) as the factors that best corresponded to their own experiences and understanding of learning. This was followed by social interaction (mean 5.13; sd 0.67) and making sense (mean 5.11; sd 0.67), then personal development (mean 5.02; sd 0.84). Social outcome was slightly lower (mean 4.86; sd 1.07). The lowest mean factor scores were remembering (mean 4.77; sd 0.78) and new information (mean 4.72; sd 0.77).

Table 4.7: Mean scores for conceptions of learning factors by cultural cluster

	Broadening Horizons 1	**Personal Development 5**	**Making Sense 4**	**Social Interaction3**	**Social Outcome 6**	**Remembering 7**	**New Information 8**	**Using Information 2**
Total (n = 153)	5.2794 (sd.75869)	5.0105 (sd.83879)	5.1085 (sd.67356)	5.1258 (sd.75716)	4.8497 (sd 1.07159)	4.7621 (sd.77689)	4.7075 (sd.76293)	5.2418 (sd.74141)
North American (n = 12)	5.3125 (sd.80570)	4.9833 (sd.76495)	5.2500 (sd.52657)	5.0417 (sd.81766)	4.3333 (sd 1.07309)	4.7333 (sd.54160)	4.5000 (sd.63960)	5.1250 (sd.97991)
European (n = 57)	5.0482* (sd.71095)	4.5789* (sd.74994)	4.9298 (sd.71263)	4.9430* (sd.83321)	4.4211* (sd 1.25637)	4.5789* (sd.83039)	4.3816* (sd.82390)	5.1754 (sd.71646)
MENA (n = 32)	5.2891 (sd.96743)	5.2063* (sd.86133)	5.0875 (sd.82060	5.0781 (sd.75252)	5.1094* (sd.76973)	4.9000 (sd.59243)	4.9063* (sd.59144)	5.0781 (sd.74172)
Asian (n = 24)	5.4792 (sd.67533)	5.1417* (sd.77455)	5.3083 (sd.51068)	5.1771 (sd.66952)	5.2708* (sd.60755)	4.5250* (sd.79741)	4.9583* (sd.42775)	5.3333 (sd.71728)
Central Africa (n = 28)	5.5536* (sd.48761)	5.5643* (sd.64877)	5.2643 (sd.50495)	5.5446* (sd.47167)	5.2857* (sd.88641)	5.1929* (sd.75323)	5.0179* (sd.83591)	5.5357 (sd.65162)

As can be seen from the above table (Table 4.7) and Figure 4.1, below, the mean rating from participants from the Central Africa cultural cluster was highest for all factors except 'making sense', which was rated highest by Asian participants. The mean scores from the European cultural cluster were lowest for six of the eight factors. The Asian

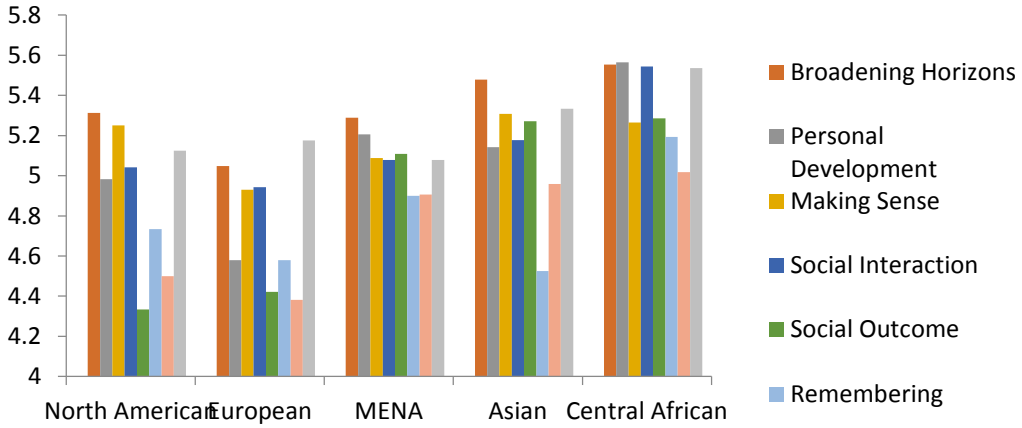
participants' mean score for 'remembering' was lower than the other cultural clusters. The mean score for 'using information' was scored lower by participants from MENA and North America respectively. Other than 'remembering' and 'personal development', which they scored third, the Asian cultural cluster give the second highest mean score to the other factors, with the exception of 'making sense'. The MENA cultural cluster generally gave a lower mean score than Asian and Central Africa and higher than Europe and Central America, except 'using information', which they score lowest. The participants scored the items on the COLI particularly high, with each learning conception having a mean score at the upper end of the scale. This could be the result of an acquiescent response style, a common concern in questionnaire research in higher education, which varies across different cultures (Van Herk, Poortinga, & Verhallen, 2004). However, as reported by Richardson (2012) when acquiescence and extreme responding were found between an approaches to studying inventory and a course perceptions questionnaire, the relationship between the scores remained the same.

The means for each learning conception were compared across the five cultural clusters by a one-way analysis of variance for independent groups. The following result was obtained for 'broadening horizons', F (4, 148) = 2.79, p = .000. A post hoc (Tukey) test indicated that there was a significant difference between the European students and those from the Central Africa cultural cluster. The 'personal development' learning conception also showed a significant main effect F (4, 148) = 8.96, p = .000. The post hoc (Tukey) test found that the European students rated personal development significantly lower than all other cultural clusters, except those from North America, but this may be due to the low number in this group. There were no cultural differences for the 'making sense' learning conception. 'Social interaction' produced the following result; F (4, 148) = 3.26, $p < 0.014$, with the Tukey test showing the only significant difference between European students and those from Central Africa. As with 'personal development', the 'social outcome' learning conception showed a significant main effect, F (4, 148) = 6.30, p = 0.000 and the post hoc (Tukey) test indicated that European students rated 'social outcome' significantly lower than students from Asia, MENA and Central Africa. There was a significant difference between the cultural clusters for the 'remembering' learning conception, F (4, 148) = 4.062, $p < 0.004$. The post hoc (Tukey) test revealed that Central African students rated remembering higher

than those from the European and Asian cultural clusters. The 'new information' learning conception was significant, F (4, 148) = 5.83, p = 0.000, and the post hoc Tukey test showed that the difference was again between European students and MENA, Central Africa and Asia cultural clusters. There were no differences found for the 'using information' learning conception.

These findings will be summarised in the final section of this chapter and discussed in detail in the following chapter (section 5.4).

Figure 4.1: Mean scores for conceptions of learning factors by cultural cluster



4.6 Exploring the relationships between cultural cluster, academic performance and conceptions of learning

Having reported the data from predicted academic performance (perceived mark) and actual academic achievement (actual mark) and identified eight learning conceptions from factor analysing the conceptions of learning inventory (COLI), the following section will explore the relationship between cultural clusters, COLI factors and academic performance (predicted and actual). The purpose of this analysis is to identify any predictors of academic performance and to investigate relationships between cultural clusters and conceptions of learning.

As can be seen in Table 4.8 on the following page, there were a series of significant correlations between mean scores on the various factors, indicating shared variance, which is expected, given that the COLI was constructed to assess a larger latent construct of learning conceptions, in addition to the sub-components (actual mark, perceived mark, age, gender and cultural cluster) identified in this analysis. As culture

is a category variable, it was recoded, creating dichotomous dummy variables (0, 1) for each cultural cluster to meet the criteria for correlation and regression analysis. Categorical variables with two levels may be directly entered as predictor or predicted variables in a multiple regression model, where the regression weight is added or subtracted to the predicted value of Y depending upon whether it is positive or negative.

No correlations were overly high (> 0.8) which suggests that, while sharing variance, the factors are suitably independent for inclusion as predictor variables in a regression model without multi-collinearity.

Table 4.8: Correlation matrix exploring relationships between age, gender, cultural cluster, academic performance and conceptions of learning

		Actual Mark	North America	Europe	MENA	Asia	Central Africa	Broadening Horizons	Personal Development	Making Sense	Social Interaction	Social Outcome	Remembering	New Info	Using Info	Age	Gender
Perceived Mark	Pearson	-.026	.014	**-.221**	-.021	-.106	**.388**	**.199**	**.258**	-.036	.075	.063	.088	-.040	.086	-.023	-.054
	Sig 2-tailed	.751	.860	.006	.793	.192	.000	.014	.001	.660	.358	.441	.279	.628	.293	.775	.511
Actual Mark	Pearson		-.067	.047	**-.174**	.118	.063	.022	-.032	.080	-.060	.069	.010	-.016	.124	**-.171**	-.010
	Sig 2-tailed		.420	.570	.035	.154	.444	.791	.700	.336	.469	.407	.903	.846	.134	.037	.902
North America	Pearson			**-.224**	-.151	-.124	-.136	.013	-.009	.061	-.033	-.141	-.011	-.080	-.046	**-.163**	.078
	Sig 2-tailed			.005	.061	.124	.091	.876	.908	.450	.690	.082	.894	.328	.571	.043	.335
Europe	Pearson				**-.402**	**-.331**	**-.363**	**-.236**	**-.398**	**-.205**	**-.187**	**-.309**	**-.182**	**-.330**	-.069	.026	.030
	Sig 2-tailed				.000	.000	.000	.003	.000	.011	.021	.000	.024	.000	.395	.752	.715
MENA	Pearson					**-.223**	-.244	.007	.120	-.016	-.032	.125	.092	.134	-.114	.157	-.014
	Sig 2-tailed					.005	.002	.936	.138	.844	.690	.124	.260	.098	.161	.052	.860
Asia	Pearson						**-.201**	.114	.068	.128	.029	**.170**	-.132	.142	.053	-.121	.005
	Sig 2-tailed						.012	.161	.406	.114	.719	.036	.104	.079	.512	.134	.951
Central Africa	Pearson							**.172**	**.314**	.110	**.263**	**.193**	**.263**	**.193**	**.188**	.026	-.081
	Sig 2-tailed							.034	.000	.177	.001	.017	.001	.001	.000	.749	.317
Broadening Horizons	Pearson								**.675**	**.460**	**.473**	**.288**	**.277**	**.259**	**.406**	**.031**	**.162**
	Sig 2-tailed								.000	.000	.000	.000	.001	.001	.000	.705	.044
Personal Development	Pearson									**.483**	**.548**	**.470**	**.340**	**.329**	**.331**	.090	.137
	Sig 2-tailed									.000	.000	.000	.000	.000	.000	.269	.089
Making Sense	Pearson										**.311**	**.350**	**.469**	**.319**	**.476**	.087	**.215**
	Sig 2-tailed										.000	.000	.000	.000	.000	.287	.008
Social Interaction	Pearson											**.523**	.169	.216	**.318**	-.049	**.174**
	Sig 2-tailed											.000	.036	.007	.000	.545	.031
Social Outcome	Pearson												**.232**	**.258**	**.209**	-.014	.122
	Sig 2-tailed												.004	.001	.009	.859	.132
Remembering	Pearson													**.405**	**.422**	.075	.086
	Sig 2-tailed													.000	.000	.359	.288
New Info	Pearson														.190	.005	-.001
	Sig 2-tailed														.018	.952	.989
Using Info	Pearson															.008	.151
	Sig 2-tailed															.924	.062
Age	Pearson																-.075
	Sig 2-tailed																.356

*****Significant correlation coefficients are highlighted in **bold**

4.6.1 Academic performance (actual mark and perceived mark) and related variables

Stepwise linear regression analyses were conducted to examine the relationship between academic performance (both actual and perceived) and culture, age, sex and the eight learning conceptions derived from this research. For actual academic performance the model accounted for less than 3% of the variance. The model was significant [$F(1,143) = 4.77$, $p<0.05$]; a single predictor for actual academic performance was MENA. However as MENA was a dummy variable made up from students being from the Middle East and North Africa and all the other culture variables were excluded from the model this finding was difficult to contextualise.

For perceived academic performance the overall model was significant [$F(3,143) = 11.74$, $p = 0.00$] . The stepwise regression resulted in three steps; the first step was Central Africa, the second step was personal development and the third, broadening horizons. The final model accounted for 18% of the variance. Central Africa was again the only dummy culture variable to be retained in the analyses therefore hard to define. Personal development was positively related to perceived performance and broadening horizons was also positively associated with perceived performance.

Table 4.9: Beta coefficients, *t* and *p* values for Central Africa, personal development and the broadening horizons learning conception as a predictor of perceived academic performance

Variable	Unstandardized Coefficients		Standardized Coefficients		Sig
	B	*Std Error*	*Beta*	***t***	*p*
Central Africa	5.998	1.385	0.346	4.330	0.000
Personal Development	1.838	0.682	0.226	2.694	0.008
Broadening Horizons	1.679	0.739	0.184	2.273	0.025

4.6.2 Gender and related variables

There was no relationship between age and any variables other than actual academic performance at the end of the first trimester (actual mark), as reported above (see section 4.5.1), and the North America cultural cluster. The North American students were younger than the other students (see Table 4.1). Gender was correlated with the

broadening horizons learning conception ($r = 0.162$, $n = 154$, $p < 0.022$, one-tailed), the making sense learning conception ($r = 0.215$, $n = 154$, $p < 0.004$, one tailed) and the social interaction learning conception ($r = 0.174$, $n = 154$, $p < 0.031$, one tailed). Applying a multiple regression analysis, gender was tested as the criterion variable, using each of these learning conceptions as the predictor variables. The overall model was not significant, F (5.148) = 1.946, $p < 0.90$. Therefore, none of the learning conceptions identified in this research predicted the gender of the participants.

4.7 Focus Group Activity Outcomes

Approximately one month after the students completed the Conceptions of Learning questionnaire, three separate focus groups were held, which further explored students' understanding and experiences of learning and how their learning conceptions interact with formal assessments. The selection process for inviting participants to the focus groups is outlined in Chapter 3 (section 3.4). The following section will present the outcome of the focus group activity, while the common themes and pertinent quotes from the focus groups discussions will be presented in Chapter 5 as the outcomes from the quantitative analyses are considered in detail.

As described in Chapter 3 (section 3.5.3), students in the focus groups were asked to rate their top five of the nine Purdie et al. (1996) conceptions of learning in order of importance to them at that point in time, with 1 being most important and 5 being least important. Scores for the each learning conception were then reversed for ease of collation. In Table 4.10, students' original scores are in the brackets, and reversed scored are added to produce a total for leach learning conception.

Table 4.10: Focus group participants' ratings of Purdie, Hattie, and Douglas' (1996) Learning Conceptions

		Focus group 1		Focus group 2			Focus group 3					Total score for each CoL
		Women 29 European	Women 26 Asian	Women 30 European	Women 26 Central Africa	Women 23 Asia	Men 29 MENA	Women 22 Asia	Women 26 Central Africa	Women 41 Asia	Men 27 Central Africa	
Conceptions of learning (Purdie & Hattie, 1996)	Increasing knowledge	(2)4	(2)4	(1)5	(3)3	(5)1	(1)5	(2)4	(3)3	(1)5	(1)5	39
	Memorizing, reproducing & studying		(5)1			(4)2				(2)4	(5)1	8
	Using information as means to an end				(2)4		(2)4	(5)1	(1)5	(3)3		17
	Understanding	(1)5	(1)5	(3)3	(1)5	(1)5		(1)5	(4)2		(2)4	34
	Seeing something in a different way		(3)3	(2)4		(2)4	(4)2	(3)3		(5)1	(4)2	19
	Personal fulfilment	(3)3	(4)2	(4)2	(5)1		(3)3	(4)2	(2)4			14
	A duty	(4)2										2
	A process not bound by time or context				(4)2	(3)3	(5)1		(5)1			7
	Developing social competence	(5)1		(5)1						(4)2	(3)3	7

As can be seen from the above table, students who participated in the focus groups rated 'increasing knowledge' overall as the learning conception that was most meaningful to them. Four of the ten students thought that 'increasing knowledge' was the most meaningful phrase when thinking about learning, closely followed by 'understanding'. All students rated 'increasing knowledge', and eight of the ten students rated 'understanding', as an important aspect of learning. 'Seeing something in a different way' was the next term to be recognised as an important component of learning, with only one student rating it as the most relevant aspect of learning, but seven rated this within their top five. Five students did rate 'using information as a means to an end', but no one rated this conception as highest. 'Personal fulfilment' was rated in the top five conceptions by seven of the participants. No students saw this as the most important aspect of learning, but one student saw this as the second-most important, following 'using information as a means to an end'. Four students rated 'a process not bound by time or context' either as the third, fourth or fifth most important aspect. 'Developing social competence' was rated third by one student, fourth by another and the fifth most important aspect of learning by another two. Only one student rated learning as a 'duty' within their top five most pertinent learning conceptions to them. The implications of the ratings of these learning conceptions will be discussed in the following chapter, alongside relevant quotes and themes which were drawn from discussions in the focus groups.

4.8 Summary of Quantitative Findings

The final section of this chapter summarises the quantitative findings in relation to the original research questions. This research set out to explore a group of culturally diverse post-graduate science students' conceptions of learning. The following section will address each of the three key questions for this research.

4.8.1 What does learning mean to a group of culturally diverse post-graduate health and life sciences students?

The Conceptions of Learning Inventory (Purdie & Hattie, 2002) was used to collect data from the group of 156 post-graduate students registered on taught Life and Health Science Masters' programmes. The data from the COLI were factor analysed to explore whether conceptions of learning identified by the original authors were relevant to the current population. The original nine factors, as identified by Purdie et al. in 1996, had

been revised to five factors (Purdie & Hattie, 2002). This research found eight factors which were meaningful to the population of culturally diverse taught post-graduate health and life sciences students; 'new information', 'making sense', 'remembering', 'using information', 'broadening horizons', 'personal development', 'social interaction', and 'social outcome'.

The factor from this analysis that was most prevalent was learning as 'broadening horizons'. The population of students viewed learning as looking at life in new ways, changing ways of thinking, widening views and finding new ways to look at things. This finding aligns with a deep approach to learning (see Chapter 2, Table 2.1), which is what would be expected from students who are registered on a post-graduate degree programme. This, however, is not supported the findings from the focus group activity when students were asked to rate their top five of Purdie et al.'s (1996) learning conceptions. Overall, students from the focus groups rated 'seeing something in a different way' which was Purdie et al.'s (1996) learning conception most closely affiliated to 'broadening horizons', as their third-most pertinent learning conception, with no students rating it as the highest.

'Using information' was the identified factor in this study which closely followed 'broadening horizons'. Students viewed learning as the ability to use information when necessary in a variety of situations. This featured as the fourth most prominent learning conception in the focus group activity. 'Using information as a means to an end' could arguably be categorised as being aligned to a surface approach to learning in the literature, therefore, it is interesting that post-graduate health and life sciences students' responses in the COLI scored learning as 'using information' so highly.

The factor analysis of the COLI identified a conception which was associated with the relational aspect of learning, termed 'social interaction'. This included items regarding learning from other people, not necessarily in the classroom. It was on items from this conception that students scored most highly, following 'broadening horizons' and 'using information'. However, learning as 'developing social competence' was not rated highly by those students who attended the focus groups, with only four out of the ten students rating it at all. There was no clear relational learning conception in the list presented to the students in the focus groups, but learning as 'developing social competence' was the closest match.

Learning as ‘making sense’ was the identified factor that covered items in the questionnaire such as ‘learning means I can talk about something in different ways’ and ‘learning is making sense out of new information and ways of doing things’. This, arguably a deep learning approach, was scored highly by the students. Learning as seeing something in a different way was the third ranked conception in the focus group activity with seven out of ten students rating it.

Five items from the COLI made up the ‘personal development’ learning conception, which all related to improving as a person. This conception yielded the fifth highest mean. It could also be aligned to the ‘developing social competence’ learning conception from Purdie et al. (1996), which was rated highly by students in the focus groups. ‘Learning as developing good relationships’ and ‘the development of common sense’ made up the conception ‘social outcome’ was rated lower than the conceptions previously noted. ‘Social outcome’ as derived from this research would also be a best fit with Purdie et al.’s (1996) ‘social competence’.

Students in this research are less likely to perceive learning as ‘remembering’ or ‘gaining new information’ in comparison to the previously discussed learning conceptions, both of which are considered to be a surface approach to learning (see Chapter 2, Table 2.1). There is an interesting contrast between students perceiving learning as ‘increasing knowledge’ as the principle learning conception as identified by Purdie et al. (1996), rating it most highly in the focus group activity, and viewing learning as ‘gaining new information’ as being less meaningful to their experience and understanding when responding to the CLOI items. This finding will be explored in detail in Chapter 5.

4.8.2 How do conceptions of learning interact with academic performance?

This research was interested in both predicted academic performance and students’ actual academic performance. As previously explained, predicted academic performance was students’ forecast, in their third week of their studies, of their mean score across the first trimester. Their academic performance was their actual mean mark at the end of their first trimester. Contrary to the literature in this field (Richardson, Abraham, & Bond, 2012), this research found no relationship between how students predicted they would perform and how they actually performed. Overall, students predicted they would perform better than they did, and when broken down by

cultural cluster, this was most evident in the MENA and Central Africa cultural clusters. There were no differences across cultural clusters or gender in actual academic performance. However, students from the Central Africa cultural cluster predicted they would perform better than students from MENA, Europe and Asia cultural clusters predicted they would perform.

It was expected that students who scored higher in the learning conceptions affiliated to a deeper learning approach would perform better than students who rated conceptions more closely aligned to a surface approach to learning. However, no relationship was found between any of the learning conceptions identified in this study and actual academic performance. It was found that the 'broadening horizons' and 'personal development' learning conceptions predicted academic performance, however, the interaction was small.

Academic performance was discussed in relation to students' understanding and experiences of learning in the focus groups. The content of these discussions will be considered in Chapter 5 where the implications of the findings are reported.

4.8.3 Are there cultural differences in conceptions of learning?

Addressing the above research question necessitates a comprehensive discussion around cultural classification, which is a highly complex factor in understanding conceptions of learning. This cultural classification will be critically addressed in Chapter 6. Considering the cultural clusters as identified in this research there were some differences across the groups for six of the eight identified learning conceptions. Generally, students from the European cultural cluster scored the items in the COLI (Purdie & Hattie, 2002) lower than students from the other cultural clusters, with students from Central Africa scoring them highest. The primary differences were those observed between European students and Central African students for 'broadening horizons', 'personal development', 'social interaction', 'social outcome', 'remembering' and 'new information'. European students viewed the 'personal development' learning conception as less meaningful than students from all other culture clusters, except North America. European students also regarded the 'social outcome' learning conception as less meaningful to their experience and understanding of learning in comparison to students from Asia and MENA as well as Central African students.

Considering the literature around Chinese learners (e.g. Watkins & Biggs, 2001), it is interesting to note that students from Asia, as well as Europe, rated 'remembering' as less important to learning that students from Central Africa. 'New information' had a similar pattern with students from the European cultural cluster, rating it as less important to learning that students from all other cultural clusters except North America. Finally, there were no cultural differences in the 'using information' learning conception.

4.9 Summary of Chapter 4

This chapter provided the demographic details of the students who participated in this research, it then explored academic achievement and predicted academic performance, noting that, in this research, these variables were not correlated. There were no cultural or gender differences revealed in academic achievement, but students from Central Africa predicted that they would perform better than students from other cultural clusters. By applying an exploratory factor analysis, eight conceptions of learning were identified in this research which were labelled and compared to the six previous conceptions identified by the original authors of the Conceptions of Learning Inventory (COLI). 'Broadening horizons' and 'using information' were most meaningful conceptions to the students who completed the COLI, however, 'increasing knowledge' and 'understanding' were the learning conceptions that were most meaningful to the students who participated in the focus groups. There were some cultural differences in conceptions of learning identified in this study; generally, students from Central Africa scored most learning conceptions higher than students from other cultural clusters. There were no learning conceptions that predicted academic achievement with this group of post-graduate health and life sciences students, although there was a relationship between predicted academic performance and 'personal development' and 'broadening horizons'. Finally, the quantitative findings were discussed in relation to the research questions. Chapter 5 will further discuss the findings in relation to the qualitative data derived from the three focus groups.

Chapter 5: Analysis

5.1 Introduction to Chapter 5

As described in previous chapters, this study used the Conceptions of learning Inventory (COLI, Purdie & Hattie, 2002) to measure a culturally diverse group of health and life sciences post-graduate students' conceptions of learning. Data from the COLI were further supported by focus group discussions. This chapter will explore the content of the focus group discussions which will contribute to the discussion of the quantitative results as reported in the previous chapter. Each research question will be addressed separately, although there is much overlap among the points which are raised in response to the outcomes. Limitations of the current study, along with a detailed account of the implications of this work for further research, higher education national and institutional teaching and international policies and practices, are presented in the final chapter.

Previous research in this field mostly focuses on undergraduate students with some work in secondary and tertiary education students' conceptions of learning rather than on post-graduate students. The data from this research suggest that this group of health and life sciences post-graduate students, who were experienced learners in higher education, had a broad understanding of learning. This research supports the view that learning conceptions change in relation to context rather than being individually or culturally fixed. However, the data challenge a number of other previous claims, particularly the relationship between learning conceptions and academic achievement. The participants in this research had clearly experienced very different pedagogical approaches and assessment methods prior to embarking on their master's programme, but these were not directly related to their conceptions of learning as suggested by the literature.

5.2 What does learning mean to a group of culturally diverse post-graduate health and life sciences students?

Marton, Dall'Alba, and Beaty (1993) argue that a conception of learning is both a way of seeing what is learned and a way of seeing how something is learned; the literature generally supports the view that learning is both an outcome and a process. Conceptions of learning were first reported in the academic literature by Säljö (1979),

who collated a hierarchy of five qualitatively different conceptions which are now very well established (for detailed discussion see Chapter 2, section 2.2.2). Further researchers have added to Säljö's original five conceptions of learning. As outlined in Chapter 3 (section 3.5.1) this research utilised Purdie and Hattie's (2002) conceptions of learning inventory (COLI) because of its having been developed with a culturally diverse sample. Due to the difference in the demographics of the participants in this research, in comparison with Purdie and Hattie's (2002) sample, the 32 items were factor analysed to explore the loadings of the original items. Some variation was expected. However, the outcome of the analyses resulted in eight factors which did not map exactly onto Purdie and Hattie's (2002) identified factors, but were a closer fit to their earlier identified conceptions (Purdie et al. 1996). Table 5.1 shows the learning conceptions identified from this research in relation to previously identified conceptions as discussed in Chapter 2.

A factor analysis statistically loads the items but the interpretation of the loaded items lies with the researcher. Data from the COLI were collected within the first month of the students' registration on their programme, and the focus groups were held approximately six weeks later. As the COLI had not been analysed prior to the focus group discussions, it is likely that the content of the discussions within the three focus groups influenced the researcher's interpretation of the factor loadings of the COLI items. The following paragraphs will unpack the participants' dialogues from the focus groups when asked 'what does learning mean to you?' This should help provide a context for the interpretation of the COLI factor analysis, addressing the question, 'what does learning mean to a group of culturally diverse post-graduate health and life sciences students?'

Entwistle and Walker (2002) talk of a 'nested hierarchy' of conceptions of learning, implying that the sophisticated learner has a more flexible approach to learning through a developed awareness and experience of learning. It would, therefore, be expected that post-graduate students would hold learning conceptions at the top of the hierarchy.

5.2.1 Focus group discussions

All three focus groups opened with the researcher asking the participants about their experience of learning, at school and then university (see Appendix V for demographic details of focus group participants). Discussions around previous experiences of

learning will be unpacked in section 5.4 when exploring cultural differences in conceptions of learning. Participants were then asked about their understanding of the term, learning, referring to the learning conceptions presented on the pre-provided learning conceptions document (see Appendix IIIb) if they wished.

> *[Learning is ...] Taking in new information … but also understanding it … not just memorising it … If I'm really learning it I've got to know all about it.* [1|1]

This first quote, from a European student who had experience of education in UK, Germany and Slovakia, talks about learning as information and understanding. She views understanding as more than memorising which aligns with widely accepted hierarchy of learning conceptions but she makes no reference to learning as a transforming process.

The second student in the first focus group, whose previous learning experience was in Bangladesh, was asked what learning means to her.

> *For me learning is something I gain … I don't have to memorise and repeat this … I want to gain it so it will become part of me … so [learning] is seeing something in a different way … increasing your knowledge and understanding … How to be a good part of society.* [1|2]

This student places more emphasis on higher level conceptions aligned to a deep approach to learning. She suggests that once something is learned, memorisation and repetition are not necessary. In the Western literature in this field, memorisation and understanding are generally viewed as mutually exclusive. However, research conducted in Hong Kong identifies an approach to studying that views memorisation as a route to understanding. This theory goes on to suggest that people from the Far East perceive learning as a sequential process which begins with memorisation and ends in a change in understanding the self (Pratt, 1992; Pratt, Kelly, & Wong, 1999).

The following quote from the second focus group highlights the notion that experienced students embrace all the learning conceptions identified in the field but in an ordered manner.

> *It is everything, all these things [pointing at the document on the table, see Appendix VIIa]; you begin learning by increasing knowledge. You keep on learning and eventually you become wise and fulfilled.* [2|3]

This further supports the notion of a learning conceptions' hierarchy beginning by increasing knowledge and the top of the hierarchy being personal fulfilment. Both these conceptions were previously presented to the students. The reference to wisdom by this Danish student is an interesting addition, not a term that is used the conceptions of learning literature.

The following quotes from the third focus group again open with learning as gaining or increasing knowledge.

> *I first think learning is increasing your knowledge and also important for me is learning as a means to an end, this leads to personal fulfilment.* [3|1]

This student, a man, whose previous experience of learning had been in Oman, construes 'a means to an end', which the literature aligns with a surface approach to learning, as leading to 'personal fulfilment'. Personal fulfilment could be interpreted as an achievement of life's goals. As this student goes on to discuss later, the master's programme is a route to a good career which is very important to him, hence the association between learning as 'a means to an end' leading to 'personal fulfilment'.

A Chinese student (a woman) also makes reference to increasing knowledge and skills to enhance her professional status, associating the growth of knowledge with making you a better person.

> *To gain knowledge to make you a better person. To improve your skills. For me I need more knowledge and skills so I come here to learn from good teachers. It is important for my profession that I grow my knowledge and skills.* [3|2]

It is generally accepted that the Chinese culture values knowledge and treats instructors and texts as highly authoritative sources of knowledge (Pratt, Kelly, & Wong, 1999). This point is salient when understanding the requirements for academic achievement in relation to formal assessment, as discussed in the following section.

The second Chinese student in this focus group also viewed knowledge as central to learning and again makes reference to self-improvement. This cultural emphasis on the importance of knowledge will be further explored in section 5.4.

> *Increasing knowledge is fundamental to learning … this is to improve yourself.* [3|5]

The Nigerian student, a man, viewed learning more about skills acquisition than increased knowledge. Skills acquisition is not one of the accepted learning conceptions identified in the literature, although it could be argued that skills acquisition is a form of increasing knowledge. It is interesting to note that this student discussed learning as 'know-how' rather than learning as propositional knowledge associated with academic study.

> *Learning is about skills that you pick up in everyday life …* [3|4]

This participant told a story of about being a musician and blogging about his life. He recounted this story to illustrate that his life skills have provided him with knowledge and developed his understanding which has really helped with learning on his post-graduate programme.

> *Some of these things that I have picked up are very useful to me right now.* [3|4]

This analogy suggests that this student viewed learning as a lifelong process; he placed much emphasis on the notion that if you engage in activities you enjoy, by practicing and developing, you are continually learning. Purdie et al. (1996) introduced the learning conception 'a process not bound by time or context' and, although the student did not make direct reference to this learning conception, this is how it was interpreted.

These six quotes demonstrate that the participants in the focus groups viewed learning as a broad range of activities. There was some reference, either directly or indirectly, to most of the learning conceptions as reported in Table 5.1, at the end of this section. Interestingly, all of the participants opened their response by using a term to describe learning that would be considered to be affiliated with the surface approach to learning (Marton & Säljö, 1984). In all of the examples this was then supported by a further description that is aligned with a deep approach to learning. Participants were

deliberately not presented with the learning conceptions in any particular order to prevent them from seeing them as hierarchical, but in the discussion it became quite apparent that they viewed learning conceptions as ordered with gaining or increasing information as the most elementary of the learning conceptions. The notion of self-improvement and personal fulfilment appear to be the final outcome of learning, the top of the hierarchy, as a number of students suggest that development of knowledge and skills leads to accomplishment. As the focus group discussions did not further explore the students' understanding and experiences of learning in relation to a hierarchy all the identified conceptions cannot be ordered in this research.

Perhaps, had the students not had access to a document of widely accepted learning conceptions, they may have used different terms to describe their knowledge and experience of learning. It was, however, decided that to help stipulate some focus for the discussion before their arrival, providing a document with widely accepted learning conceptions would be helpful. In focus groups 1 and 3 the students had not spent any time looking at the document on the table that listed Purdie et al.'s (1996) learning conceptions. Group 2 participants were looking at it as they got their refreshments before the discussion began. As all focus group participants had been sent the learning conceptions document by email they may have studied this prior to the discussion.

After an initial introduction from each participant in which they outlined their experiences and views of learning, they were asked to rank the top five of Purdie et al.'s (1996) nine learning conceptions into which were most pertinent for them (for a full breakdown see Table 4.10 in the previous chapter). The learning conception that was most relevant to their experience and awareness of the term learning was 'increasing knowledge'. This is supported by their introductory statements in response to the question, 'what does the term learning mean to you?' and the literature, which identifies 'increasing information' (Säljö, 1979), 'increasing one's knowledge' (Marton, Dall'Alba, & Beaty, 1993), and 'gaining information' (Purdie & Hattie, 2002) as the first, most basic, of the learning conceptions. At the onset of this field of research, in the 1970s, it is logical that learning was understood in terms of an increase of knowledge or gaining information. However, in the 21st century, when the majority of post-graduate students grew up with instant access to information via the World Wide Web, it could be argued that the value of holding knowledge or increasing information

would have declined. There is certainly evidence that the internet is changing our cognitive ability (Sparrow, Liu, & Wegner, 2011). Although access to information is far easier in the 21st century, 'increasing information' or 'gaining knowledge' is still viewed as the fundamental learning conception. It can, if course, be argued that 'increasing knowledge' and 'gaining information' are not the same concepts.

Students then rated 'understanding' as the learning conception that was next most pertinent to them. This is the first learning conception aligned to a deep approach to learning as identified by Säljö (1979). The term, understanding, was not really discussed in much depth; the British student in focus group 1 was the only participant to mention understanding in her opening statement about learning. Further into the discussions there seemed to be an implicit acknowledgement that understanding is key to success, particularly at master's level; this will be picked up again in the following section when looking at assessment. Students then rated 'seeing something in a different way', 'using information as a mean to an end' and 'personal fulfilment', in that order, as most meaningful to them. They viewed 'memorising, reproducing and studying', 'developing social competence', 'a process not bound by time or context', and 'a duty' as less applicable when asked to rank the conceptions. Although the initial responses from students, when asked about the meaning of the term, learning, suggests that learning conceptions are hierarchical, and students certainly did not rate the importance of the conceptions as ordered in Säljö's (1979) hierarchy.

The process of asking them to partake in this activity raised some noteworthy points. One participant asked,

> *Rank them as important to me or as important to my culture?* [2|3]

And another asked,

> *Do you mean for learning on our programme, our subjects, or for learning in general?* [3|1]

These questions highlight the argument that learning is not static and led the discussion onto the how we adapt our understanding of learning to meet the needs of the learning context. This shows an analytical sophistication on the part of the students; they don't have one conception of learning, they view understanding learning as being negotiated

in relation to context. Participants in all three focus groups were asked how their conceptions of learning changed as they developed through the education system, particularly from undergraduate to post-graduate.

> *I used to consider myself the brain child, so it was just a case of memorising and spewing it all back out again … If you have common sense and you can memorise, learning is easy at school … Even for some of my exams at undergraduate, you can pass exams by memorising and not really understanding but the understanding started at undergrad and now it's all changed, at a higher level.* [1|1]

This British student whose secondary education had been at an international school in Germany and higher education in Slovakia implies that understanding is not a concept of learning until undergraduate study. This is interesting when explored in relation to her present understanding and experience of the term, learning:

> *… if I'm really learning I've got to know all about it.* [1|1]

This provides evidence that, for this student, there was a significant development of her conceptions of learning that took place between becoming an undergraduate student and her current position of post-graduate student in her first trimester.

There was a fairly extensive discussion about critical thinking and learning in the UK in comparison to some of the other cultures represented in this research. Much of this is unpacked in section 5.4. The following quote from a Danish student in focus group 2 highlights an interesting point around how conceptions of learning develop, particularly in relation to your environment. A number of authors researching across different countries have found that conceptions of learning are contextually dependant (e.g. Eklund-Myrskog, 1997 in Finland; Watkins & Biggs, 2001 in Hong Kong; Marton & Säljö, 1976 in Sweden; Entwistle, 1997 in the UK).

> *Learning is about asking questions. I remember asking why, why, why you start questioning everything, you ask your parents why is it like this, why is that? ... Then you go to school and learning is more about memorizing, for example 2 x 2 = 4, children stop asking questions and have to answer*

> *questions. In university learning is about asking questions, in my master's degree we have to do a lot of questioning.* [2|3]

The above extracts all provide evidence that learning conceptions change in relation to context but as all the students in the focus groups had moved country to study a post-graduate programme it is not possible from this research to unpick the distinction between learning experiences and views from different cultures and experiences and views of learning across different level of study.

In focus group 1 the discussion about the adaptation of learning conceptions extended to subject area. There was support from the discussion that learning conceptions vary across disciplines.

> *People change their methods of learning, people have to adapt to whatever subject you are studying.* [1|1]

Neumann, Parry, and Becher (2002) found that what they term soft disciplines are more likely to engage in critical thinking and nurture deep approaches to learning, whereas disciplines such as engineering and accounting are more likely to use surface approaches. This is endorsed by the following quote.

> *To learn something, like formulas, you have to memorise but other things you need to understand and look at it from all angles so it depends on what you are studying.* [1|2]

As well as highlighting the need for different learning conceptions for different disciplines, this British student distinguishes between memorising and understanding, indicating that they are mutually exclusive. The following quote from an Indonesian student also points out the need for learning conceptions to be aligned with discipline, but implies that memorisation is related to understanding, further supporting the view that Chinese (or high-context culture) learners view memorization and understanding as an interlocked processes.

> *Memorisation depends on discipline, very important in science … memorisation can only work for learning if repeated and the information is used and then it has meaning.* [2|2]

The notion that learning conceptions change to align with the learning context rather than being individually or culturally fixed is questioned by the following quote from a male student whose previous experiences of education had been in Nigeria.

> *There was no critical evaluation in my undergraduate, that made me feel cheated, it is not what I think learning should be. It was very didactic teaching, memorization and reproducing is encouraged. Now, here it is so very different, I am learning how to be very critical which is very good.* [3|4]

He explains that the teaching approach was didactic, promoting memorisation and reproduction, which is aligned to a surface approach to teaching, yet this did not meet his own learning conceptions, as it made him feel 'cheated'. He goes on to state that he wanted to come to study in the UK as it is a better culture for learning. There is much evidence that conceptions change in relation to context but this quote suggests that there is more to the development of learning conceptions than the learning environment and teaching approach. This is further addressed in section 5.4.1.2.

In a review of students' approaches to learning, Richardson (2005a) suggests a potential explanation for the variation of students' approaches to learning within the same course is that "the effects of contextual factors are mediated by students' perceptions of their academic environment" (p. 674). He further reports that there is a relationship between students' approaches to studying and their perceptions of the quality of their courses (Richardson 2005b). This may explain the variation in approaches to studying but further research is required before it can be ascertained that this is also relevant to the development of their learning conceptions.

If, as suggested by the literature (e.g. Marton, Dall'Alba, & Beaty, 1993), learning conceptions are hierarchal, then it could be expected that more students in this research would hold the conception 'learning as changing as a person' than in other research which explores learning conceptions of students with less formal learning experience. Certainly 'personal fulfilment', which was the term Purdie et al. (1996) allocated to the items which aligned best to Marton, Dall'Alba, and Beaty's (1993) 'changing as a person' conception, was rated more pertinent in this research than 'memorising, reproducing and studying', 'a duty', 'a process not bound by time or context' or 'developing social competence'.

5.2.2 Comparison of the interpretation of the COLI items across different samples

Chapter 4 (section 4.4.4) makes comparisons between the learning conceptions identified in this research and Purdie and Hattie's (2002) learning conceptions which used the same 32 items in the COLI. As can been seen from Table 5.1, the factors identified in this research better align with Purdie et al.'s (1996) conceptions. When interpreting the factors from the factor analysis the researcher had already held the focus groups which discussed Purdie et al.'s (1996) nine conceptions. This undoubtedly influenced the interpretation of the grouping of items from this factor analysis. In both Purdie et al.'s 1996 study and Purdie and Hattie's 2002 study, learning as a duty was identified as a learning conception but this did not fit with the participants in this research. In the 1996 paper, their Japanese students placed emphasis on learning as a duty to teachers and parents, "In several instances, an expression of learning as being difficult co-occurred with an expression of the responsibility, duty, or obligation that one has both to oneself and to other people in society" (p. 94). Only one Australian student in their study held 'learning as a duty' as a conception. Two of the items from the COLI that sat in their 'learning as a duty' factor were grouped with the 'making sense' factor in this research, 'learning is difficult but important' and 'even when a task is difficult, I must concentrate and keep trying'. The third item from their 'duty' conception, 'learning and studying must be done whether I like it or not' was the only item in this research that did not fit into any of the factors. In the focus groups students were asked whether learning was a duty to themselves or others in society.

> *Learning as a duty will not succeed. Learning must come with self-motivation to be truly successful.* [3|1]

This quote from the Omani student sums up the general views of the participants, who agreed that you could not accomplish master's study if it was as a duty to anyone else. No student felt that they had an obligation to others to learn, although this may be a learning conception of others, particularly in Chinese culture.

> *In my culture you have to study at school and do your best or you will let your parents down but for me learning is a duty to myself.* [3|2]

This suggests that the students in this research, although early in their UK education journey, have adopted learning conceptions more aligned to Western views of learning or perhaps learning conceptions are more global for students who have extensive experience in learning.

5.2.3 Conceptions of Learning Inventory

Several participants in the focus groups made some reference to learning as 'personal fulfilment', 'becoming a better person' or 'contributing to society', so it is clear that the top end of the hierarchal learning conceptions are being fully embraced by the post-graduate students in this research. This is further supported by the students' responses to the COLI. Although there was little difference between the mean score for each of the eight learning conceptions identified from the factor analysis, 'broadening horizons' scored most highly. 'Broadening horizons' best aligns with Marton, Dall'Alba, and Beaty's (1993) and Prudie et al.'s (1996) 'seeing something in a different way' which, as suggested by Marton, Dall'Alba, and Beaty (1993), is a more advanced conception supported by a deep approach to learning.

The group of 156 students who completed the COLI viewed 'using information' as the second most pertinent learning conception; a more basic learning conception associated with a surface approach to learning. 'Using information' was not addressed in the focus groups; no student raised this, or a related term, to interpret their understanding and experience of learning. One student in focus group 2, a man from the MENA cultural cluster, talked about learning as a means to an end but this was in relation to getting a well-respected career, rather than using information. It could be that students did not see 'gaining information' and 'using information' as mutually exclusive, hence when discussing increasing knowledge and gaining information they may have implicitly thought of this as using the information/knowledge acquired.

'Social interaction' and 'making sense', closely followed by 'personal development' and 'social outcome', were the next most prevailing learning conceptions from the COLI data. All these relate to a deep approach to learning indicating an advanced conception of learning. Personal fulfilment, as identified by Purdie et al. (1996), was closely aligned to 'personal development' in this research, and was raised by a number of students as an important aspect of learning. Personal fulfilment was often seen as the purpose of learning, something that learning leads to. This may be particular to this

group of students at the time the data was collected. At the early stages of post-graduate study, students are likely to be appreciative, enthusiastic and optimistic about their learning journey, seeing themselves close to gaining personal fulfilment as they complete their master's.

The lowest scoring two items from the COLI data were 'new information' and 'remembering', both of which are associated with surface learning. The 'remembering' conception from this research is aligned to 'memorising, reproducing and studying' (Purdie et al., 1996). It is remarkable that so many of the students in the focus groups' opening statements made reference to learning as the acquisition of knowledge or gaining information, yet, when presented with items which made up this conception in a questionnaire, they rated them lower than items related to other conceptions of learning. Learning as memorisation, reproducing and studying were all discussed in some detail, however, this was largely in relation to teaching styles and assessment expectations in their home countries. As the outcome of the focus group is so different from the COLI findings, it questions the validity of the instrument in this context. Mogashana, Case, and Marshall (2012) found a range of contradictory responses in their study which interviewed ten of eighty students who completed the Approaches to Learning and Studying Inventory (Entwhistle et al., 2000), claiming that students were confused by some statements and many responses were context-dependant.

Contrary to some previous research, the learning conceptions at the top of the hierarchy were highly rated by the group of health and life sciences post-graduate students in this study. Cliff (1998), one of the few learning conceptions studies conducted on post-graduate students, found the most frequently occurring learning conception was 'learning as the acquisition of knowledge'. This, however, supports the finding from focus group activity in this research, whereby students were asked to rank Purdie et al.'s (1996) learning conceptions, with 'increasing knowledge' being the most popular.

Post-graduate health and life sciences students in this research rated learning as 'new information' as the least important learning conception on the COLI. On the COLI, 'broadening horizons' rated highest, and the closest match to Purdie et al.'s (1996) 'personal fulfilment' was rated 5th of the nine conceptions. From the discussion in the focus group discussions, 'increasing knowledge' was certainly pertinent for learning,

but there was much more to conceptions of learning that acquiring information and knowledge.

Table 5.1: Conceptions of Learning incorporating conceptions from current study

	Säljö **(1979)**	**Marton, Dall'Alba, and Beaty (1993)**	**Purdie, Hattie, & Douglas (1996)**	**Purdie & Hattie (2002)**	**Current study**	**Van Rossum & Hamer (2010)**	**Tynjala (1997)**
Surface approach	**An increase in knowledge**	Increasing one's knowledge	Increasing knowledge	Gaining information	New information	Increasing knowledge	Learning as an externally determined event/process
Surface approach	**Memorising**	Memorising and reproducing	Memorizing, reproducing and studying	Remembering, using and understanding information	Remembering	Memorising	Learning as a developmental process
Surface approach	**Acquisition of facts, procedures etc. which could be retained and/or utilised in practice**	Applying	A means to an end		Using information	Reproduction understanding/ application or Application foreseen	Learning as student activity
Deep Approach	**Abstraction of meaning**	Understanding	Understanding		Making sense	Understanding subject matter	Learning as strategies/styles/ approaches
Deep Approach	**An interpretative process aimed at understanding reality**	Seeing something in a different way	Seeing something in a different way	Personal change	Broadening horizons	Widening horizons	Learning as an externally determined event/process
		Changing as a person	Personal fulfilment		Personal development	Growing self-awareness	
			A duty	A duty	Social outcome		
			A process not bound by time or context	A process not bound by time or context			Learning as a developmental process
			Developing social competence	Social competence	Social interaction		Learning as student activity

5.3 How do conceptions of learning interact with academic achievement?

Prior to exploring the interaction between learning conceptions and academic achievement from the quantitative results and the focus group discussions, the following section will consider other salient features that were considered in relation to academic achievement.

5.3.1 Predicted academic performance and academic achievement

This research considered both actual academic achievement (the mean mark across three courses taken in the first trimester) and predicted academic performance (students were asked, using the university post-graduate marking criteria, to predict their mean mark for the first trimester). It is well accepted in the literature that students who believe that they have the skills and abilities to succeed at academic tasks perform better than those with lower efficacy expectancies (Bandura, 1997). This, however, was not supported in this study; there was no relationship between predicted academic performance and actual academic achievement. This is likely to be related to the population of students in this research. Academic performance efficacy expectations rely on students' experience with similar challenges. When challenges, such as assessment formats, are familiar, students can draw on past experiences to formulate expectations. This is labelled 'performance self-efficacy' by Richardson, Abraham, and Bond (2012). However, as in this study, when challenges are unfamiliar, the outcome must be predicted on the basis of more generalised representations of ability. This is referred to as 'academic self-efficacy (Zimmerman, Bandura, & Martinez-Pons, 1992). The link between performance self-efficacy and academic performance is very well established; the link between academic self-efficacy and performance is under-researched. Chemers, Hu, and Garcia (2001) found academic self-efficacy and optimism to be strongly related to performance, both directly on academic achievement and indirectly through expectations. As is evidenced in the following section, when the cultural differences in assessment are unpacked, most students in this study were highly inexperienced in the nature of the assessment required in their programme, which may explain the lack of any relationship between academic self-efficacy and academic performance. One of the weaknesses in this field is that few studies differentiate between academic and performance self-efficacy and even fewer report the point in the student journey at which they are predicting their performance. The assumption being

that early in the student journey, when data were collected for this research, the students are more optimistic about their academic ability. Overall. students in this research predicted they would perform better than they did, and, when broken down by cultural cluster, this was only evident in the MENA cultural cluster and students from Central Africa.

There were no significant differences across cultural clusters in actual academic performance, although the Asian students performed slightly higher than other cultures and were the only culture to perform better than they predicted.

Rienties, Beausaert, Grohnert, Niemantsverdriet, and Kommers (2012) found that academic performance of both international and home students is affected positively by academic integration, that is to say, how the student adapts to their new academic life. Students in this research predicted their academic performance in the third week of their programme, which may be too early to know how they would integrate into university in the UK and post-graduate study. In their study, which explored academic performance and integration of first-year undergraduate business students in the Netherlands, their participants were categorized according to the "degree of Westernness" (Dutch, Western, mixed Western, non-Western). A major finding in this work is that the successfulness of academic and social integration is partly related to the distance in East–West social conventions among international students. Western and Mixed Western students performed better than Dutch and non-Western students. Non-Western students had lower scores on academic and social integration in comparison to other students, with the exception of academic adjustment. Rienties et al.'s (2012) work is interesting in relation to culture and academic performance but their findings may not be applicable to this research as the difference in adjustment between first-year undergraduate and post-graduate students is likely to be significant.

The relationships between students' demographic variables (i.e. gender and age) and their academic performance appear to be inconsistent in the literature. For example, although the majority of such studies have suggested that men had an advantage in student performance in some subjects such as economics (e.g., Anderson, Benjamin, & Fuss, 1994), some studies found no significant gender effect (e.g. Rhine, 1989), and others found that women had an advantage in the same subject (e.g., Williams, Waldauer, & Duggal, 1992). With regard to the effect of age, contradictory findings

have appeared, too. For example, Clark and Ramsay (1990) detected a negative relationship between age and academic performance, while McInnis, James, and McNaught (1995) found that mature students are more likely to perform better. This research found no gender differences in either predicted academic performance or actual achievement. A negative relationship between age and actual academic achievement was found, as younger students performed better than older students. This relationship can be attributed to the North American students, who were all registered on one programme, were younger than the other international students, and the academic achievement (or assessment scale) on that programme was higher than for the other programmes in the study.

5.3.2 Learning conceptions and academic performance

The relationship between conceptions of learning and academic achievement has not received much attention in the literature, possibly due to the commonly held assumption that students' conceptions of learning are positively related to their learning outcomes. Students who view learning as an interpretative process aimed at understanding reality will 'change as a person' and perform better than students who view learning as increasing their knowledge. Van Rossum and Schenk (1984) and Purdie et al. (1996) have claimed that there is a relationship between students' conceptions of learning and their learning outcomes. However, the evidence to support this claim is weak. Actual academic achievement was not predicted by any of the learning conceptions in this research. From the focus group discussions it was clear that the students did not equate their learning on their programme to learning outcomes.

> *Getting good marks is not about learning. I want to increase my knowledge not get good marks. I just need to pass.* [3|1]

This quote summarises the general views of the students in relation to academic achievement on their programme. It was very important to them that they were successful, but none of the students in the focus groups placed importance in getting high marks. They seemed to hold the view that the outcome of their assessment was not directly related to what they learn on their programme. The discussion in focus group 2 went further, with one student suggesting that the assessment process is detrimental to a deep approach to learning, encouraging a surface approach. It should be noted that not all students in the focus group had received feedback on their assessment at the time of

the focus groups. This quote is, therefore, more likely to be in relation to this Danish student's previous experience of assessment.

> *School squashes the creative mind, learning stops becoming about imagination and more about memorisation. The assessment process kills learning.* [2|3]

As students in the focus groups were from different programmes, some students had received feedback from their first piece of assessment, while others had not. As part of the induction process for international students, all students had received information about the assessment regulations and marking criteria for Health and Life Sciences Masters' programmes. When the researcher further probed how to achieve good marks, two of the three focus groups made reference to meeting the expectations of the markers, which is not related to students' learning conceptions. The following quote is from a student who had recently received feedback for his first lab report.

> *To get a good mark is not about really learning, it is about absolutely understanding what the professor wants, you get a better mark if you cite their work, even if you don't think it is relevant.* [3|4]

There is a disparity between students' understandings of learning and their views of the assessment process. There was a belief that a student could be learning a lot, participating in a deep approach to studying, but not necessarily achieving good marks. This was highlighted in both focus group 2 and focus group 3.

> *Knowing the teachers [is important for understanding their marking criteria]. I know the undergraduate students know what the teachers are going to ask. We don't know how the teacher asks the questions. Know what they do for research. To understand this you get better marks. It should be objective but no person is.* [2|3]

This student in focus group 2 was studying on a master's programme which shares a course with the undergraduate programme; this explains her comparison with the undergraduate students. She felt that the masters' students, particularly the international students, were at a disadvantage due to the less developed relationship with the academic teaching staff. This is an interesting concept when, as will be discussed in the following section, one of the key benefits to learning in a UK environment is the

excellent interactions students have with academics. This led onto a discussion about the importance of feedback, but, as few students had received feedback from assessment on their programme, it was not possible to determine the exact role of feedback in the relationship between learning conceptions and academic achievement.

The final theme that arose from the focus group discussions around academic achievement and learning is the content of the assessment. As will be addressed in the following section, there are vast differences in students' experiences of assessment from their previous learning experience and the expectations of assessment in UK.

> *Always have to think about the exam in my country but here you get a lecture that might not be assessed.* [1|2]

Students could, therefore, engage in studying a topic in detail, fully understanding the concepts but that topic may not be included in an unseen exam paper, as exam papers in the UK regularly do not include all the topics covered in a course. This could result in a poor mark, as the student may not have such a deep understanding of the other topic(s) included in the paper. The student has, however, 'increased their knowledge', 'gained information', 'understood' and 'seen something in a different way'. Higher-order learning conceptions will not necessarily always lead to high assessment marks, which is the measurement of academic achievement.

The learning environment, particularly access to practical labs, and the relationship with academic teaching staff, are both viewed very positively in comparison to previous learning experiences, but the assessment process was not seen as advantageous to learning. It is clear from the quantitative analyses and the focus group discussions that there is no relationship between learning conceptions and academic achievement with the post-graduate health and life sciences students in this research. This supports Fuller (1999), who suggests that the learning context has more influence on academic achievement than conceptions of learning. Haggis (2003) argues that personal meaning of learning is highly constrained by discipline boundaries, and even further by the lecturer who is delivering the material and marking the assessment. Perhaps, had the focus groups been held later in the students' post-graduate learning journey, once they had developed a better relationship with the academic staff and engaged in feedback, their learning conceptions would then be associated with their academic achievement.

5.3.3 Learning conceptions and predicted academic performance

The quantitative analyses found that the learning conceptions 'broadening horizons' and 'personal development' predicted how the students who completed the COLI expected they would perform in their first trimester. Both these learning conceptions align with Purdie and Hattie's (2002) 'personal change' learning conception, which is associated with a deep approach to learning. Students who scored higher in these conceptions predicted they would do better than those who did not score so highly on these conceptions. There is no published work in the field which explores the relationship between academic self-efficacy or performance self-efficacy and conceptions of learning, so these findings cannot be compared to students at any level of study. However, there are several studies (e.g. Alamdarloo et al., 2013) that show that students who hold learning conceptions at the top end of the hierarchy perform better than students whose learning conceptions align to a surface approach to studying. The literature also suggests a relationship between self-efficacy and academic achievement, so it would be expected that students who hold learning conceptions affiliated with deep approaches to learning would predict they would perform better than those who place less importance in higher learning conceptions. Students who were high achievers in their previous learning environment, for example, university, college, and school, are likely to predict they would perform better than those who had not experienced high grades. These same high achievers may hold higher learning conceptions than those who did not perform so well in comparison to their peers. In this research, previous academic achievement was not considered.

As discussed in the previous paragraphs, students did not view the assessment process as evaluating their learning but merely as evaluating how they were able to meet the expectations of the academic teaching staff. This may explain why learning conceptions associated with a deep approach to learning predicted students' perceived academic performance but not their actual achievement.

5.4 Are there cultural differences in conceptions of learning?

The quantitative analyses found that there were little cultural differences in learning conceptions across the five cultural clusters. Due to the relatively small population in this research and the large number of countries represented within this population it is unfeasible to state that a particular culture emphatically holds any learning conception

higher or lower than another cultural cluster. The limitations of adopting the cultural cluster approach will be addressed in detail in Chapter 6 (section 6.4). This section will report the findings from the cultural clusters as identified in this study and will explore these in relation to the focus group discussions.

The most basic learning conception, as reported in the literature, which was termed 'new information' in this research, was scored lower by European students than by students from Central Africa, Middle East and North Africa (MENA) and Asia. The Central African cultural cluster, which was mainly populated by students from Nigeria, scored highest in the 'new information' learning conception. It could be argued that European students rated 'new information' lower as their experience of learning at undergraduate was more likely to involve critical thinking than students in the other cultural clusters. This was supported by students in the focus groups, evidenced by the following quote from a Nigerian student.

> *I now try to ask questions for learning.* [2|1]

The 'remembering' learning conception was again reported as more important by the Central African students than the other cultural clusters. The emphasis on memorisation for learning in Nigeria has already been discussed with a Nigerian student (a man) stating:

> *It was very didactic teaching [in Nigeria], memorization and reproducing is encouraged.* [3|4]

'Using information' and 'making sense' showed no cultural differences in the quantitative analyses and were not raised as pertinent learning conceptions in the focus group discussions. As previously highlighted, students may not have viewed 'gaining information' or 'increasing knowledge' and 'using information' as mutually exclusive. There was some reference made in the discussions to 'understanding', which aligns with 'making sense' in this research, but this was in relation to memorising and repetition, which the Asian students viewed as related but which students from other cultural clusters saw as quite separate activities.

Central African students scored 'broadening horizons' highest, although the only significant difference was between them and the European students, who scored this

conception lower than the other cultural clusters. It could be argued that students from further afield than Europe have greater cultural adjustments to make, therefore learning in the UK is more likely to broaden their horizons than for European students, some of whom were from the UK. Rienties et al. (2012) found that non-Western students face more obstacles before they can actually integrate into academic life compared to the other student groups. This does not explain why Central African students would score this conception higher than students from MENA or Asia. The COLI analysis produced a similar effect for 'personal development', which was scored lowest by the European students and highest by Central African students. There is no doubt from the discussion in focus group 3 that the Nigerian student viewed learning as a lifelong process, which he believed leads to personal fulfilment, more so than the European students.

'Learning is developing good relationships' and 'learning in order to become a member of society' were the items that made up the learning conception 'social outcome' in this research, which was rated lower by the European students. In the focus groups the only students to discuss learning in relation to social outcome were from Asia. The final learning conception derived from this research, 'social interaction' which was made up from items such as 'I learn a lot from talking to other people', and 'learning is knowing how to get on with other people', which showed a similar effect with Central African students scoring significantly higher than the European students, while other cultural clusters sat in between. The analogy provided by the Nigerian student, as reported in section 5.2.1, is further evidence that a student from Central Africa saw skills acquisition through social interaction as being fundamental to learning.

The differences in learning conceptions across cultural clusters in the COLI highlight that European students rated most learning conceptions lower than all other cultural clusters, with only North American students rating learning as 'social outcome' as lower and Asian students rating 'remembering' as lower. This is an interesting concept in relation to the general belief that Chinese students are far more likely to use memorisation as a form of learning than other cultures (Watkins & Biggs, 1996). The Central African students' tendency to rate most learning conceptions higher than other students and predict that they would perform better in their first trimester than the other students in this research may be related to a cultural difference in how they complete questionnaires.

5.4.1 Cultural differences in pedagogy

The researcher opened the focus group discussions by asking students to say something about their previous experience of learning, particularly at undergraduate study. Students were not specifically asked to make comparisons between their previous experience and learning on their current post-graduate programme in the UK, but most of them did. The quote below from a Bangladeshi student includes an analogy which summarises many students' experiences. She uses several of the learning conceptions that were emailed to all participants before attending the focus group.

> *For my country and here is has really changed a lot … everything changes … our education system is totally different … Like if you have to make a sandwich here, you have to do it on your own, discover how to make it. It is interesting … you have to think and see something new in a different way … Everyone might have same ingredients but everyone makes a slightly different sandwich. But in our country, our education system is like they give you everything and tell you how you must do it. All the [sandwich] ingredients will be the same and everyone must make the same sandwich in a certain way. It's boring, you have to memorise it exactly and in the end everyone has the exact same sandwich.* [1|2]

As there were no 'home' students in the focus group and the changes in context from previous learning experiences were not explored in the questionnaire, it is impossible to know exactly which aspects of the transition are due to culture differences and which are related to the step between undergraduate and post-graduate learning. Most comments from the focus groups regarding the transition reported in this section are assumed to be primarily related to cultural differences in pedagogy. This is reinforced by comments from the Nigerian student who completed her undergraduate programme at another Scottish university. Three key themes arose from the discussion around previous experiences in learning in higher education which will be addressed in the following paragraphs: creativity, criticality and independent thinking; methods of assessment and feedback; and relationship with academic staff. These differences in the learning context were not the key focus of this research, so the points raised in the following paragraphs are not discussed in relation to literature in this field, but will be

raised regarding the direction of future research on cultural differences in learning conceptions in the final chapter.

5.4.1.1 Creativity, criticality and independent thinking

As highlighted in the sandwich analogy in the quote above, the student from Bangladesh has found a need for creativity for learning in the UK in comparison to Bangladesh. She believes that her previous experience of education suppressed creativity.

> *When I came here it's like totally opposite, again struggling, because I already lost a lot of creativity. Here you need creativity; you have to create your own way.* [1|2]

The need to be able to critically evaluate was raised in all three focus groups with Central African and Asian students having less experience than students who had previously been educated in Europe.

> *[In Nigeria] no critical evaluation, just to give back lectures what they give you in the notes and I didn't like that.* [3|3]

The European students in focus groups 1 and 3 both alluded to critical thinking at undergraduate study. The student in group 1 who had been at a British school in Germany and studied veterinary medicine in Slovakia made reference to the increase in critical appraisal from her undergraduate experience but did not state whether there would have been an increase in criticality had she continued her studies in Slovakia.

> *You're not just writing about it but you are having to say what is good, explaining the arguments then sating what you think about it. There was a little bit of this at undergraduate but much more now here for master's.* [1|1]

In the second focus group, students were asked when they were first encouraged to think critically by teachers. The Danish student who had completed her first degree in Norway had always been encouraged to think critically. Her quote below immediately follows the Indonesian student who had only recently considered herself a critical thinker.

> *We have to do these assignments. I think [critical thinking] starts much earlier. We have to find things out and discuss why, like what is chlorophyll? We've always had to do discussions and comparatives. Why is this better than that? What is the difference … We always had debates at school, had to read up and debate on that [topic]. You know how to be critical … But it starts properly at uni, you have to say this is a bad model for this, you can't do this without reading upon the subject. Here you have to be really critical of everything, it's really hard being positive critical.* [2|3]

Like the Bangladeshi student in group 1, the Indonesian student in focus group 2 found the teaching approach very different. She, however, places more emphasis on the difference in independent thinking than critical thought.

> *Our lecturers back home created our thinking step-by-step … you must learn the steps.* [2|2]

Independent thinking was also an issue for the Chinese students.

> *The difference between Chinese study and here, I think, is the tutorial … they give you a topic and [you are expected to engage in] independent thinking. In China they give you the points [you have to learn] and you pass the exam.* [3|2]

The move from conformist learning to independent thinking was also raised in relation to academic achievement for the Bangladeshi student in focus group 1. This student shows a preference for independent learning.

> *Here it is a crime if you follow someone exactly but in my country it is a crime if you don't. It's like for me different. If I try something new in my country I get zero, if a do a math in a different way even if answer is same, I get bad mark. We must do it same way we are taught … I don't want to learn like this, I want to learn my own way.* [1|2]

This move from providing students with theoretical knowledge, encouraging intellectual conformity, to independent thinking is certainly the direction that is expected from undergraduate to post-graduate study in the field of health and life sciences. It could be argued that conformist learning is a continuum with independent thought at the other

end. Students are expected to progress along this continuum throughout their learning journey. Students with different cultural learning experiences will join that continuum at different points. There is certainly support from the students that they are learning to be independent, critical learners.

> *I think students in master's degree should be independent, in learning. Most of the assessment here, they give you a topic and you have to search for it and do it as perfect as you can. In Oman they give you sub point and sub point and direct you to the sources and references … This is the big difference, but this is what master's degree should be.* [3|1]

When the Chinese student was reporting the difference in critical thinking between her undergraduate experience and her current programme, the Nigerian student, who had completed her undergraduate degree in the UK, did not find the same distinction.

> *To be honest, I don't see much difference [between master's and undergraduate]. Less assessment. More tests at undergraduate, more lab report. The skill you develop at master's is more focus.* [3|3]

She later goes on to explain that her experience in critical thinking is from her undergraduate study in UK and this was helped by feedback and studying.

> *I got the critical thinking from the UK. Feedback is really, really important and investing lots of time into private study, I try to ask questions and really think now.* [3|3]

From the above quotes there is much evidence that the students in the focus groups, particularly those who had not had any previous experience of European education, had found a significant difference in pedagogy. The expectation for creativity, criticality and independent learning is greater in their post-graduate programme for all students but those who were not from a European education system found the difference greater. This is interesting as the literature suggests learning conceptions develop in relation to the learning context (Richardson, 2000). Those who foster a deeper approach to learning will have higher learning conceptions, yet European students rated 'personal development' and 'broadening horizons' (higher learning conceptions) lower than their non-European counterparts, particularly those from Central Africa.

5.4.1.2 Assessment and feedback

The second theme in relation to cultural differences in pedagogy is assessment and feedback. Assessment has already been discussed in relation to measuring academic achievement, but it is also significant in relation to the transition from the students' own learning culture to the UK learning context. All students in the focus group, except the Danish student, made some reference to the different types of assessment, but again it is impossible to state whether this was the difference between undergraduate and post-graduate study, or indeed the subject area of their programme. The Omani student was familiar with the style of delivery of material but noted that the greatest difference to his previous experience was the assessment.

> *The way of delivery for me is very similar, the lectures, the same but the big difference in the assessment. Here they depend a lot on essay assessment, writing a lot. In our country it is different; they give us a lot of multiple choice questions, true false, many presentations and short answer questions.* [3|1]

Most students had not experienced writing lengthy essays which is required in all Health and Life Sciences Masters' programmes. The difference in assessment means a adopting different approach to gaining academic achievement. Writing essays requires creativity, criticality and independent learning, whereas students' previous assessment experiences required mainly memorisation.

> *We don't do courseworks, we don't do labs and all, we only do exams. You can cram, read the books the night before, all night, then go in and pass the exam.* [2|1]

The Nigerian students' experiences of assessment tended to be focused on exams, but the Asian students had experienced a variety of assessment methods. However, the approach to studying for these promoted memorisation and repetition.

All students, as part of their induction programme, were required to attend a seminar regarding expectations of assessment of post-graduate health and life sciences programmes. Students were, therefore, aware that the skills required for the types of assessment on their programme would be very different to their previous experiences. This is evidenced by the following quote from the Bangladeshi student.

> *Our [in Bangladesh] education is based on exam. You learn the material and they test your knowledge. Here they assess the way you think, not what you know.* [1|2]

This point is further supported by one of the Nigerian students.

> *What they want here is to see your train of thought.* [3|3]

These differences in experiences of assessment were not confined to the Central African, MENA and Asian students. The British student who had a degree from Slovakia had very a different assessment experience, as all of her undergraduate degree exams were oral. She was positive regarding the transferable skills from oral examinations, stating that, as a vet, she would have to be able to explain an animal's condition orally. However, writing post-graduate essays was going to be challenging given her lack of experience. She also stated that memorisation was required more so than understanding.

> *All my exams at undergraduate were oral. It's not what you think, they give you a question, you have to memorise the answer and speak it in an oral exam.* [1|1]

Although the type of assessment for most students is very different, a couple of Asian students commented that the load of assessment was lighter in the UK. This is summarised by the Indonesian student in focus group 2.

> *My undergraduate is much harder than here, so many exams and seven lab reports per week. Here we only have two lab reports for the semester but here I am struggling more … In Indonesia we also have different courseworks, presentations, exams, reports.* [2|2]

Some of the students in the focus groups had submitted summative assessment, yet only one had received feedback. Most students had submitted some form of formative assessment; this will be further discussed in the following subsection. As there was minimal experience of feedback, students did not raise the importance of qualitative feedback as would be expected. Any reference to feedback from their previous educational experience was in relation to a mark. Due to the assessment of their creativity, critical thinking skills and independent learning, qualitative feedback is likely

to be more important for their learning than quantitative feedback. The only student to raise feedback as a concern was the Danish student, who was also the only student who did not discuss a major difference in assessment experience.

> *You need feedback, a meeting. You need to know what you did wrong, where did I go wrong and see your mistakes.* [2|3]

Perhaps had the focus groups taken place later in their learning journey, feedback would have been a greater issue for them.

There is much evidence to show that, for the majority of these students, the current assessment methods are very different from their previous experiences and it is expected that these experiences would have contributed to their learning conceptions. The students from Nigeria had the least experience of a variety of assessment methods yet rated the higher the learning conceptions, 'personal development' and 'broadening horizons', higher than the other cultural clusters with a wider range assessment experiences.

5.4.1.3 Relationship with academic staff

The final theme to be considered in cultural differences in pedagogy is the interactions students have with academic staff. Students were not asked about the relationship or interaction they have with their lecturers, tutors and lab technicians, but this came up in all three focus groups, so is briefly included in this section on pedagogical differences. There is much literature on accepted behaviours in high-context and low-context cultures (Hofstede, 1991) in the academic environment, but little of this addresses learning conceptions. Students from high-context cultures, the Chinese, Indonesian and Bangladeshi students, all found their interactions with staff in the UK to be a positive learning experience. The staff's interaction with students was seen as supportive.

> *Here the teachers are very co-operative, it is a culture shock. The teacher/student relationship for all Asian country is really different. If a teacher comes I want to hide somewhere, I am really afraid of him or her. In here when I saw our teacher we say, 'Hi, how are you?' and we can call them by their name, no madam, no sir. It is really important for learning that they are so supportive.* [1|2]

The reason this was viewed as supportive for learning may be the local policy for formative assessment in masters' programmes in the university, a practice that was unfamiliar to most students.

> *I chose a topic, I write the topic then I give the doctor to see if they like the writing. In my country you cannot do this.* [3|5]

The Central African students also found formative feedback a very positive, novel, learning experience, as highlighted by the Nigerian man in the third focus group.

> *You can go to the teacher and talk about what you will write in your essay. That to me is like a blank check. You could never do this before. But not all students utilise this.* [3|4]

He goes on to state how the lecturers prioritise students' needs but points out that this may only apply to international students who are paying high fees for their education.

> *It is different because you can interrupt the lectures … The lecturers, literally, you feel like they are here for you. You knock on their door and if they are working on something they put it aside, perhaps because you pay a lot of money for it [laughs].* [3|4]

These interactions that students have with teaching staff are viewed as helpful to their learning process. Indeed, in the Asian and Central African learning cultures, upon which there is much more focus on learning through memorisation and repetition and assessment by examination, an authoritarian approach to teaching is likely to be more successful for learning.

The only student in the focus groups who stated that she had previously experienced less formal interactions with teaching staff was the Danish student who had completed her degree in Norway.

> *The way we learn [at school in Denmark] is pretty much the same as UK … It is more relaxed, we call teachers by their first name.* [2|3]

She goes on to talk about teachers listening to students' views, something that she had experienced but that many of her counterparts had not.

> *It's nice as they actually listen to you, they ask my opinion and I think, why, you already know this but they are interested in your opinion. It's the same in Norway but very different for some of the others on my programme.* [2|3]

The other European student in the focus group had not experienced such positive relationships with teaching staff in her undergraduate programme in Slovakia. She found learning in the UK more collaborative and helpful for learning.

> *Students learn more if it is interactive. You are made to feel part of the learning process. Like, I'm more of a practical learner. I enjoy the lecturers here, they lift the mood … The give you personal stories. They are real people … I have never experienced that before. It helps me learn.* [1|1]

The literature places teaching conceptions under two broad orientations. The first is teacher-centred, which focuses upon the communication of defined bodies of content or knowledge. The second orientation is student-centred and hence focuses more towards the students' learning. The latter orientation takes a developmental approach towards students and their conceptions of knowledge. It focuses upon their knowledge rather than the lecturers (Kember, 1997). It is evident from the above quotes that the majority of students had experienced a teacher-centred approach but were now perceiving themselves as learning in a student-centred environment. If students' learning conceptions derive from their experience of learning it would be expected that these students, except the Danish participant, would hold learning conceptions such a 'remembering', 'new information' and perhaps 'using information' in higher regard than 'broadening horizons' and 'personal development', but this was not the case.

5.5 Summary of Chapter 5

From the quantitative data and the focus groups discussions it is clear that the health and life sciences post-graduate students in this research had a broad understanding of learning. The fundamental learning conception held by these students is 'gaining new information'. This has not changed since the onset of research in the field of learning conceptions and has been found by numerous researchers across a variety of cultures. There is some support for learning conceptions sitting in a nested hierarchy, as found by previous research, but this study cannot confirm the exact order of these learning conceptions. It is clear that these experienced learners held conceptions that are

considered to be at the top end of the hierarchy, but the differences across the cultural clusters are fairly minimal.

The participants in this research had vastly different experiences of teaching and assessment than with which they are engaging in their current UK post-graduate programme. Many of them had moved from teacher-centred to student-centred learning environments, resulting in very different interactions with teaching staff. These differences in pedagogy do not appear to be directly related to their learning conceptions.

Their academic achievement at the end of their first trimester was not related to their learning conceptions, although higher-end learning conceptions predicted academic self-efficacy in some cultural clusters. There was a robust view that academic achievement scores were not in any way a measurement of learning, only a measurement of meeting the expectations of the teaching staff. Emphatic differences in learning conceptions across cultural clusters were not found in this research, but this may be due to the nature of the population and the measurements utilised or the global nature of learning conceptions for experienced learners. The following chapter will report the conclusions of this research, outline the limitations, and discuss the implications for policy, practice and future research.

Chapter 6: Conclusions

6.1 Introduction to Chapter 6

This concluding chapter will consider the main findings, and the relevant implications and applications from this research. Following a discussion of the key findings, section 6.3 will consider implications for teaching culturally diverse post-graduate students in higher education. Recommendations for policy and practice at programme and institutional level will be proposed with a particular emphasis on enhancing international students' learning experiences at a UK university. This study highlights a number of areas that require further research to develop our understanding of students' learning conceptions, and, in particular, with an understudied sample in the field of learning conceptions in relation to post-graduate students. A mixed methods approach is deemed to be appropriate for this work. There were, however, some shortcomings in relation to the data collection tools and procedure, which are considered under the discussion relating to the limitations of this study in the final section.

6.2 Key findings

The main findings will be reported in relation to the research questions presented in Chapter 2. Additional key outcomes that were salient in the findings but are not directly related to the initial research questions are outlined at the end of this section.

6.2.1 What does learning mean to a group of culturally diverse post-graduate health and life sciences students?

It is clear from the analyses of the COLI and discussions in the focus groups that the post-graduate students in this research had a broad understanding of learning. Accepting the theory of a nested hierarchy of learning conceptions, as reported by a number of researchers in the literature, it would be expected that post-graduate students, as experienced learners, would hold conceptions of learning at the top of the hierarchy. However, the previous learning experiences of the majority of this population of post-graduate students, in which there was much focus on learning through memorisation and repetition, could have resulted in a greater emphasis of conceptions at the lower end of the hierarchy. Conceptions at the lower end of the hierarchy are associated with a surface approach to learning which was practiced in the majority of focus group

participants' undergraduate studies, particularly those from Central Africa and Asia. All students in the focus groups made some reference to learning conceptions as either gaining information or increasing knowledge which was the conception that was most salient in the focus group activity. This could, therefore, be considered as the fundamental learning conception. It is interesting to note that 'increasing knowledge' was the most basic learning conception, as reported by Säljö (1979) and, nearly forty years later, with all the technological advancements in accessing information, this is still the most salient learning conception for post-graduate students. The analysis of the COLI identified 'broadening horizons' as the learning conception that best related to their experience and understanding of learning. It is expected that this result is specific to the population of students in this research, as the vast majority of students had come to the UK to study, therefore broadening their horizons was very pertinent to them at the time of data collection.

Säljö (1979) suggested that people with fully developed conceptions of learning become aware of the different purposes for which alternative processes of learning can be used, and so become consciously aware of their learning and able to adopt processes appropriate to varying tasks. Through focus group discussions it is apparent that participants understood learning that conceptions are not static, they vary over time and according to the particular learning context. It was noted that science subjects required more memorisation of key concepts than disciplines in the arts. As there is no concise well-defined research which specifically explores post-graduate life sciences students' conceptions of learning, this cannot be directly compared to other publications in the field.

As discussed, the participants in this research, all experienced learners, held conceptions at the top of the hierarchy, with little difference between students' scores on the COLI. As is alluded to in the following section, and discussed in more detail in section 6.4, the appropriateness if the COLI to measure post-graduate students' learning conceptions must be questioned. It is interesting to note that, during the focus group activity that asked them to rate Purdie et al.'s (1996) learning conceptions in order of importance to them (for details, see Chapter 3.5.3), students rated 'increasing knowledge' and 'understanding' as the learning conceptions most pertinent to them. The learning conception factors that derived from this research, which utilised Purdie and Hattie's

(2002) COLI, indicated that 'broadening horizons' and 'using information' were more important. As previously stated, the prominence of learning as 'broadening horizons' may be due to the students having moved to the UK to study, therefore, this result may be particular to this population. This, however, does not explain why the focus group activity did not find similar learning conceptions rated as most pertinent as in the COLI. This is further evidence to suggest that the COLI is not a suitable measure of learning conceptions for a group of culturally diverse post-graduate students. It could be argued that questionnaires per se are inadequate data collection tools, not specifically the COLI. Given the diverse previous learning experiences of the students in this research in relation to assessment practices, relationships with teaching staff, access to learning support facilities and practical laboratory opportunities, all students had somewhat similar learning conceptions. A number of previous researchers have identified a strong association between learning conceptions and learning context (e.g. Eklund-Myrskog, 1998). Students in the focus groups made reference to having to adapt your understanding of learning and learning methods to the subject being studied or to meet the requirements of a particular assessment. The variety of previous learning experiences across the participants in the focus groups was palpable, yet their learning conceptions were similar, which suggests that there is far more elements influencing learning conceptions than their previous experiences of learning.

The conceptions 'memorising, reproducing and studying' (Purdie et al., 1996) and 'remembering' (derived from this study) both had low scores from the focus group activity and the COLI, respectively. This is interesting, given the discussion around assessment of learning in the focus groups, which suggested that that to perform well in assessment and achieve academically at university, students must be able to remember information and reproduce this in a format that is required by teaching staff. This is further addressed in the following section.

6.2.2 How do conceptions of learning interact with academic achievement?

There is an acceptance in the literature that students who hold learning conceptions at the top of the hierarchy perform better academically than those who hold only the more basic learning conceptions. The research in this field has been carried out predominantly on undergraduate and high school students. Alamdarloo et al. (2013) found a meaningful relationship between students' number of conceptions of learning

and their academic achievement, using Purdie and Hattie's (2002) inventory with 309 pre-university students. There is no published work directly exploring the relationship between academic performance and learning conceptions in post-graduate students.

In relation to academic achievement, this study gathered data on students' predicted academic performance and the average performance across the three courses they took in their first trimester. Contrary to other findings in this field, there was no relationship between students' academic achievement at the end of their first trimester and their learning conceptions overall, or for any of the eight learning conceptions identified in this research. The only two learning conceptions that were related to students' predicted academic performance were 'broadening horizons' and 'personal development'. Students who scored higher on these conceptions, at the top end of the learning conceptions hierarchy, predicted they would perform better than those who did not score these conceptions as highly meaningful to them. There is no clear rationale for this, but it could perhaps be explained by a relationship between self-efficacy, aspiration and confidence (Maddux, 1995).

The majority of work that has been conducted on variables predicting academic achievement among university and pre-university students implements a quantitative methodology on large cohorts of students. Perhaps, due to the smaller cohort sizes and compacted programmes, there is less published research on the academic achievement of post-graduate students. However, due to the increase in international student numbers in Western university classrooms over the last decade, there is an increasing body of research on international students' academic performance, many of whom are studying on post-graduate programmes. Young, Sercombe, Sachdev, Naeb, and Schartner (2013) found strong relationships between academic grades, psychological well-being, satisfaction with life in their new environment, intercultural competence, language proficiency, and the degree, quality and patterns of social contact among 108 non-UK post-graduate students. A number of other studies have found several factors which influence students' academic achievement, which Richardson, Abraham, and Bond (2012), in their systematic review of psychological correlates of university students' academic performance, categorise into five conceptually overlapping but distinct research domains: (a) personality traits, (b) motivational factors, (c) self-regulatory learning strategies, (d) students' approaches to learning, and (e) psychosocial

contextual influences. In this review, Richardson, Abraham, and Bond (2012) found that surface learning was weakly negatively correlated with academic performance, whereas deep and strategic learning was positively related to achievement. Interestingly, the strongest correlate of all their measures was performance self-efficacy which they define as "perceptions of academic performance capability" (p. 356). However, in this study there was no relationship between students' predicted performance and their actual academic achievement at the end of their first trimester. There is a growing body of research concerning performance self-efficacy and academic achievement which exceeds the parameters of this research, but it is worth noting that contrary to work in the field there was no relationship between students' predicted academic performance and their actual achievement at the end of their first trimester. This will be further addressed in section 6.3.1.

Although no research has been conducted directly exploring the relationship between learning conceptions and post-graduate students, Li, Chen, and Duanmu (2010) looked at Chinese post-graduate management students' academic performance in relation to other international students. They found a less active learning strategy, which is generally related to learning conceptions lower in the hierarchy, is observed among Chinese students relative to others students, but there was no evidence that this negatively affected their academic achievement. This suggests that the relationship between academic achievement and learning conceptions is lost, or yet to be established, with more experienced learners, even though these experienced learners showed differences in learning strategies. There are a number of explanations for the loss of this relationship, which is quite clear with less experienced learners. It could be, as argued by Fuller (1999), that the learning context exerts a stronger influence on learning than the conceptions of learning that students bring to the context and this could be particularly evident in post-graduate courses for students who are studying in unfamiliar contexts. Purdie et al.'s (1996) and Purdie and Hattie's (2002) Conceptions of Learning Inventory may not be a valid tool to measure post-graduate students' views and experiences of learning. The authenticity of this tool to measure post-graduate students' learning conceptions will be discussed in section 6.4. Another measure may more accurately quantify the learning conceptions of experienced learners, which would then perhaps identify a relationship with academic achievement. Another explanation for the loss of the relationship between students' learning conceptions and their

academic achievement in experienced learners may be related to post-graduate assessment criteria.

The only quantitative data in this research comprised the students' learning conceptions, and their predicted and actual academic marks at the end of their first trimester; the questionnaire did not explore their views of the assessment process. However, students in all three focus groups held the view that the outcome of their assessment was not directly related to the learning on their course. The discussion in one group suggested that the assessment process was detrimental to learning at post-graduate level. Assessment can easily measure the extent to which a student has remembered information, used information, found out new information, and made sense of a concept, conceptions at the lower end of the hierarchy. However, if learning is understood as broadening horizons, social interaction and social outcome and developing as a person, which was how focus groups in this research viewed learning at post-graduate level, how is learning being measured? It could be argued that assessment procedures in our university classrooms are not fit to evaluate more advanced conceptions of learning. Didactic teaching approaches that promote memorisation and reproduction are far easier to assess and students are able to make reasonably accurate predictions of their performance. The research which identifies that conceptions of learning have explanatory power in terms of the quality of academic achievement in undergraduate and pre-university students may be using a teaching approach which promotes and assesses memorisation, reproduction and understanding. Their participants, who show a deeper learning practice, may be the same students who are also more able to remember, reproduce and understand information; hence they are the students who have better learning outcomes. Assessing the learning of students who are encouraged to think critically and to broaden their horizons, as part of their learning experience, is a challenge which is not being addressed in higher education polices and is rarely being addressed in practice. This is likely to be an even greater challenge in the culturally diverse classrooms of the 21st century university, given the distinct previous learning experiences of the students.

6.2.3 Are there cultural differences in conceptions of learning?

Cultural differences in thinking and behaving and their implications for education are extensively discussed in the literature. Hofstede (2001) classified different countries on

the different dimensions of culture and described the possible influences this has on national educational systems. Several researchers have found cultural differences between countries, which lead to different patterns of learning and assessment. It was therefore expected that there would be cultural differences in conceptions of learning in a culturally diverse post-graduate health and life sciences classroom at a UK university. The quantitative analyses found little differences in learning conceptions across the different cultures. Students from Central Africa scored all learning conceptions, except 'making sense', higher than students from the other cultural clusters, and European students generally scored the learning conceptions lower than the other cultural clusters. The data from this study found no major statistically significant differences in learning conceptions across cultural clusters, as identified from this research. There are a number of possible explanations for this.

The students in this research came from thirty-two different countries, which were broken down into cultural clusters by geographical area with some consideration of national education systems (see Chapter, section 3.4). However, it may be that there are more differences within the cultural clusters than across them. Wursten and Jacobs (2013) documented the influence of Hofstede's (2001) five cultural dimensions on education. They identified that low-power distance cultures are student-centred, allowing students to criticise and question, whereas high-power distance cultures were teacher-centred, where students expect the teachers to outline paths of learning which are not questioned. Using the Learning Curve Data Bank's (Pearson, 2014) ranking system for the top twenty countries' performance in education, Slovakia is the highest power distance index country and Denmark the lowest of the top twenty (Pearson, 2014). The focus groups in this research included two students in the European cultural cluster, one of whom had completed her first degree in Denmark and the other in Slovakia. It is apparent from their contribution to the discussions that the Danish student had been encouraged to engage in critical thinking in her undergraduate programme and had developed a relationship with her teaching staff that encouraged questioning as a form of learning. The British student who had studied in Slovakia had experienced very didactic teaching methods and did not have any opportunities to question her teachers. Although the majority of European countries represented in this research are considered low on power distance, the above example of Slovakia and

Denmark shows that differences within cultural clusters question the validity of cultural classification of a small population which includes so many countries.

Students' previous experience of learning at university was discussed in some detail in the focus groups, and it was quite apparent that students in this research had very diverse experiences of teaching and assessment in their undergraduate programmes. There were some differences within the European group, as discussed in the previous paragraph, but fewer differences within the Asia and Central Africa groups, who all reported a form of teaching which promoted learning as the acquisition of theoretical knowledge and did not encourage a critical approach. Students from the MENA group had more experience of criticality and independent thinking. Students were asked in which country they studied for their undergraduate degree, but they were not asked about their university's teaching policy. Gibbs and Coffey (2004) found that teaching practices are influenced by teachers' conceptions of learning and teaching in their sample of teachers in a medical school, and they suggest that teaching practices often vary within a department. Therefore, there could have been quite different approaches to teaching across different institutions in the same country or different countries in the same cultural cluster. The method of cultural clustering in this research is further discussed in section 6.4. This research did find that students with very different learning experiences had similar learning conceptions which are not necessarily related to cultural background. If learning conceptions are context driven, the students in this research may hold similar conceptions as they were currently learning on post-graduate health and life sciences programmes in the same department. However, this is unlikely to have had a major influence as the quantitative data were collected within the first three weeks of the commencement of their programme in an attempt to control for learning conceptions developed in response to learning on their post-graduate programme. In the focus groups, students stated that they liked the teaching style and approach to learning that they were encouraged to adopt in the post-graduate programme more than those of their previous experiences of learning. It could be argued that learning conceptions for experienced learners, who choose to study in the UK, could be global, not confined to previous learning context or culture in any simple terms.

6.2.4 Additional key findings

There is a wealth of literature highlighting that girls lead boys in educational achievement across all levels, regardless of national gender equality, in at least 70% of countries (e.g. Stoet & Geary, 2015). The effect is stronger in arts and language courses, but also clearly evident in science programmes. Contrary to this global phenomenon, this research found no gender differences in predicted academic performance or actual academic achievement at the end of the first trimester. In comparison to other work in this field, the sample size was small and academic achievement at the end of the first trimester is early in their programme, and a gender effect may have been found by the end of the academic year. This issue is not explored in depth, however, as gender differences in academic achievement reaches beyond the scope of this research.

There were no significant cultural differences in academic achievement, although the Asian students performed better than the other groups. Overall, students, except those from the Asian cultural cluster, predicted that they would perform better than they did. When broken down by cultural cluster, this was only evident in students from MENA and Central Africa. Students from Central Africa predicted a significantly higher score than the other groups when asked in week 3 of teaching to predict their mean mark across their three courses at the end of the first trimester. These findings do challenge academic rhetoric and the assumptions of many teaching staff regarding the learning styles and academic ability of particular cultures over others.

6.3 Implications of this work

The rapidly changing student demographic in relation to cultural diversity within the classroom has resulted in academic staff not having undergone a similar learning experience to many of their students. This has resulted in considerable unverified rhetoric regarding academic ability and learning approach of international students amongst some teaching staff. Various authors (e.g. Grimshaw, 2011) have found that the international students' barriers to learning relate to the tutors' perceived problems that international students bring with them, such as: poor spoken and written language ability; a low level of participation in group work; a reluctance to display critical thinking in study; problems with referencing skills; and plagiarism. This research challenges some of these common assumptions. Much of the work in the field of international students within classrooms has been conducted on students in Business

and Management faculties, as these are more popular international degree programmes. Research in the field of learning conceptions has traditionally been carried out on pre-university and undergraduate students due to larger cohort sizes. This is the first study to explore learning conceptions in culturally diverse, post-graduate, health and life sciences students. The relationship between learning conceptions and academic achievement has not been explored in any depth with post-graduate students. The findings from this study have implications for university learning, teaching and assessment policies, international student induction programmes, and teaching practices in the classroom, and also raise a number of questions which require further research.

6.3.1 Implications for policy and practice

Kember and Gow (1990) highlight that the documented goals of higher education are remarkably similar across different national systems of higher education, regardless of the cultural setting. Typically, these goals include the promotion of independent learning and critical thinking. The British Council report on the 'Shape of Global Higher Education: National Policies Framework for International Engagement' states that student mobility is one of the best developed areas of national-level policies in international higher education (Ilieva & Peak, 2016). However, of the 26 countries covered in their report, quality assurance emerges as a weakness for all countries, except Australia, Malaysia, Germany and the UK. The majority of countries studied focus on provision rather than quality. The report also alludes to the number of developing countries that are prioritising research policy over quality assurance. It is argued that this attracts funding through international research collaborations and better responds to the growing influence of global university rankings.

Higher education has traditionally struggled with the measurement of teaching quality in comparison to research output, which is more easily quantifiable, currently though the Research Excellent Framework. The student learning experience for undergraduate students is measured nationally though the National Student Survey (NSS), a mandatory survey for all final year students commissioned by the UK Funding Councils. The Post-graduate Research Experience Survey (PRES) and the Post-graduate Teaching Experience Survey (PTES), commissioned by the Higher Education Academy (2014), is the only national survey to gather information on the experiences of post-graduate students. These national surveys allow universities to benchmark provision against

others in the sector at institutional and discipline level but, unlike the NSS, the outcomes do not feed into national and international league tables, so there is less internal pressure from university senior management to enhance performance on the PRES and PTES.

Local and national higher education policies must be continually developed to ensure universities are providing an education that equips their graduates with the skills they need to evolve professionally while increasing the efficiency of the teaching and learning process in response to escalating financial constraints. Key findings from this research play a role in a number of university policies. The following paragraphs will make recommendations in relation to the following: learning, teaching and assessment policy; international policy; student support, induction and transition policy; and staff development policy.

6.3.1.1 Learning, teaching and assessment policy and related practice

Local university learning, teaching and assessment policies vary greatly in detail, and some are far more prescriptive than others. However, in the last decade, most policies in UK universities place a greater focus on quality enhancement rather than quality assurance. Quality assurance tends to be understood as being about measurement of quality and ensuring that standards are met; while quality enhancement tends to be understood as being broadly about improving what we do in the academy (QAA, 2014). To further enhance the post-graduate student experience it is recommended that there is particular focus within local policies, addressing the specific needs of post-graduate students as experienced learners. As discussed, there is an assumption that students' learning conceptions are related to their outcomes, and this is often addressed in policy that promotes teaching methods fostering deep learning. This research questions this assumption in relation to post-graduate assessment criteria. The participants in this study raised the concern that academic achievement, that is to say, assessment grades, are not equated to learning on their programme. Several participants emphatically stated that getting a 'good' mark was about meeting the expectations of the marker rather than a measurement of what they had learned on the course. This raises the issue of parity across different markers on a particular assignment or test. Learning, teaching and assessment policies should encourage teaching staff, through the process of curriculum review, to address in detail how they evaluate students' learning on their

course. To measure independent learning and critical thinking, which broadens students' horizons and encourages personal development, assessment should not be designed merely to reward memorisation, using information and understanding. Assessment criteria could include more student reflection, by asking students to consider how understanding concepts and gaining knowledge has changed their way of thinking about particular theories and models; and the effects this will have on their future cognitions and relationships.

Addressing consistency across university teachers in rewarding student assessment is not a new phenomenon but is possibly more challenging when evaluating post-graduate work. The requirement for quality control in marking criteria creates a tension with individual academic freedom. The nature of the academy attracts distinct thinkers occupying different epistemologies resulting in diverse appreciations of students' work. Academic staff working on the same course need to ensure they hold a shared understanding of expectations of post-graduate students. This should be addressed in institutional assessment policies for post-graduate students and put into practice at local level for each course assessment. The link between institutional policy, course policy, often presented at curriculum review, and teaching practice is not always coherent. As cited by Hénard and Roseveare (2012) in the OECD, Institutional Management in Higher Education document, 'sustained quality teaching policies require long-term, non-linear efforts and thus call for a permanent institutional commitment from the top-leadership of the institution' (p. 10). This implies allowing staff time within their workload to consider their own, and colleagues', expectations of students in relation to each individual assessment. When well-defined criteria at local level have been agreed, a clear communication strategy with the students must be implemented. This will be further addressed in the following paragraphs.

A number of students in the focus groups in this research commended the opportunity they had to complete formative assessments. This was not their previous experience in their home countries. Formative assessment can take many forms and there is no clear definition in the literature. However, formative assessment principally seeks to present students with clear goals or instructions, to help them assess their current position in relation to these goals, and to equip them with the tools to bridge the gap between the two. There is a wealth of research highlighting the beneficial outcomes of formative

assessment (Dunn & Mulvenon, 2009). There is also a vast literature on the benefits of detailed qualitative feedback on assessment. Good feedback is crucial for learning, but is outwith the scope of this study; students in this research had not received feedback at the point of data collection so no recommendations are made in this thesis. This research found that the previous assessment experiences of international students are very different from the expectations of students enrolled in a UK health and life sciences post-graduate programme. Therefore, formative assessment is particularly important for this population for understanding the expectations of assessment procedures on their course. It is recommended that opportunities for formative assessment are included in courses with a culturally diverse population of students.

As previously mentioned, many institutional learning, teaching and assessment policies do not differentiate between undergraduate and post-graduate learners. The transition from undergraduate to post-graduate study has recently gathered some momentum in the educational literature, much of which is located in a 'communities of practice' framework. O'Donnell, Tobbell, Lawthom, and Zammit (2009), in one of the earlier studies in this field, found that both their staff and student participants had a understanding that methods of learning and teaching should be 'different' at post-graduate, compared with undergraduate, level. "At post-graduate level there should be more independent study and more interactive workshop-style teaching, leading to knowledge and understanding which is socially constructed rather than passively received" (p. 35). In response to this and other similar papers, a number of UK institutions have provided their students with guidance webpages. However, few universities have distinctly made reference to this transition in learning, teaching and assessment policies, and, subsequently, teaching staff may often not consider this as a priority when developing teaching and assessment practices.

As curriculum review typically sits in a five-year cycle in UK universities, teaching staff often repeat the delivery of the material without making changes to suit their student demographics. The cultural background of students in the classroom can vary dramatically year on year; this is further discussed in the following subsection (6.3.1.2). As found in this research, the experience of students from Asia and Central Africa in relation to independent and critical thinking is different to that of students from MENA and much of Europe. As will be addressed when considering student induction policy,

teaching staff should seek to understand the previous experience of their students in relation to their students' expectations of the course. How students are expected to interact with, and their accessibility to, their lecturers, tutors and lab technician should be clearly defined; that is to say, if students are offered additional support tutorials, is there an expectation that they attend?

As the needs of a diverse student population vary across programmes and, indeed, individual courses in universities, learning, teaching, and assessment policies should be developed at institutional, programme and course level. The time to embrace such policies and adapt them following empirical evidence needs to be recognised by universities, as the strategy to promote transnational education and increase international student numbers remains a priority, while enhancing the quality of teaching and, therefore, student learning.

6.3.1.2 International policy and related practice

International students are of great importance to the UK higher education sector, to internationalise the academic environment, and they contribute more than £7 billion to the UK economy (Universities UK, 2014c). For the last decade, most UK universities have a concise international policy which promotes transnational education and provides targets for international student numbers. Most international policies identify a strategic recruitment programme, with some focusing on the growing Chinese market and others placing more emphasis on Africa and the Middle East, and this can vary across programmes depending on international demand. The target countries often change in response to the political climate. This was evident when a number of life sciences programmes were developed for the Indian market early in the 21st century, but, following the scrapping of the post-study work visa in 2012, the market quickly dried up. Therefore, over time, the cultural background of students in UK classrooms changed, and such strategic changes could be communicated to teaching staff so they can adapt their teaching practices accordingly. Institutional international policy should consider the socio-cultural differences, learning conceptions and approaches to learning of students from their target markets and outline how they will support teaching staff accordingly (see section 6.3.1.4).

6.3.1.3 Student support, induction and transition policy and related practice

There is a rapidly growing literature in the field of student transitions which has fed into universities' student induction policies. With greater emphasis being placed on national and international league table positions, which consider student support mechanisms as measured by the NSS, universities have recently placed more emphasis on supporting the transition from school and college to university. This has extended to supporting international students' transition from their home country to university in the UK. In the battle for international student numbers, universities are generally good at providing international students with pre-arrival information about local culture and the physical environment of the university, for example, library opening hours, canteen facilities, etc. Most universities provide orientation sessions for students, although some students in this research stated that these took place before the beginning of teaching and for visa or financial reasons student were not able to arrive in the UK early enough to participate in such programmes.

The orientation programmes at the university in which the data were collected did not address cultural customs in relation to expected behaviour in the classroom and UK norms in relation to interacting with academic and support staff. Instead, they explained in some detail about Burns' night and local rivalry in football matches! Students in the focus group talked in some detail about the different relationship they had with teaching staff in comparison to their previous experiences. One student stated that the familiarity and cooperation of the teaching staff was the biggest 'culture shock'. Ezebilo (2012) found that the success of research students largely depends on their relationship with supervisors, and Hagenauer and Violet (2014) highlight the positive impact that good teacher–student relationships have for students and teaching staff; a largely ignored area in the education literature. This research found cultural differences in relation to pedagogy, particularly creativity, criticality and independent thinking. It is recommended that universities continue with orientation sessions before and during the academic year and also encourage programme induction sessions for students addressing pedagogy within particular courses.

Pastoral and academic support was commended by the students in the focus groups. The university in which the data were collected had a School-based Learning Development Centre (LDC) which provided workshops on academic writing,

presentation skills and studying techniques. The LDC also supported students who were struggling in individual appointments. This support system was put in place following a number of academic staff highlighting that many of their students struggled to meet UK standards for academic writing, particularly at post-graduate level. Most UK universities provide students with personal tutors, usually academic members of the school/faculty, to provide academic support to students. The personal tutor system can put pressure on academic staff to provide students with academic support, a responsibility that they feel is outwith their field of expertise and outwith their remit. Tutors in a Learning Development Centre or similar support department should be specifically trained to address cultural differences in pedagogy. This also allows students to seek support without influence and judgement from their teachers. Universities should ensure that academic support facilities are available for students in addition to support from teaching staff within the department.

6.3.1.4 Staff development policy and related practice

The last twenty years has seen a rapid increase in international student numbers in UK classrooms, which has often not been supported by staff development in cultural awareness in relation to pedagogy. The lack of groundwork with regards to culturally diverse students' learning needs has resulted in a detrimental view of international students; an issue which is addressed in the literature (Jones & Brown, 2007; Carroll & Ryan, 2005b). Staff development programmes need to address staff cultural stereotypes in relation to teaching and learning. Such programmes need to consider supporting academics in developing pedagogic approaches that explicitly engage with students' existing learning conceptions and those they seek to develop through the curriculum, pedagogies and assessments they use. Such sessions could be led by post-graduate students from countries that the programme or institution is targeting for student recruitment. The researcher learned more from the post-graduate students in the focus groups about cultural differences and needs in learning and teaching than she did from any text or institutional or national staff development sessions on cultural awareness in learning and teaching.

There is an ever-increasing pressure on academic staff to publish research papers that will contribute to the Research Excellent Framework (REF). In response to this, UK universities have developed research policies that encourage staff to strategically

engage in multi-disciplinary research projects. As previously raised, quantifying research output is less challenging than measuring good teaching practice, hence the academic promotion route is better defined for staff who have developed a clear research path. This has caused a tension between the value placed on university teaching and the value placed on university research. Institutional research policies have strategically developed research themes to enhance their REF grading. Staff are encouraged to align their research with the identified themes which, is has been argued, could be detrimental to staff conducting research to enhance their own teaching practice. This shift in policy occurred simultaneously to a reduction in funding to the Higher Education Academy (HEA). The HEA traditionally provided small grant funding for UK academic and support staff to enhance teaching practices in a number of areas across the sector. A reduction in HEA funding and the international significance of REF do not foster an environment that promotes research evaluating and enhancing learning, teaching and assessment. The Higher Education Funding Council in England has been commissioned by the Government to introduce a Teaching Excellence Framework (TEF), which aims to recognise and reward excellent teaching. At the time of writing, the sector is waiting to hear the response to the TEF consultation. Although it is acknowledged that universities need to invest in continual enhancement of learning and teaching practices, the TEF is not without criticism from a number of university chancellors.

The key outcomes from this research suggest that universities need to provide staff development in the following areas: producing appropriate assessment criteria for experienced learners, which quantifies learning on their programme; developing pedagogy that engage with different learning conceptions and previous learning experiences; developing local course policies which outlines expectations of the diverse student demographic in university classrooms; and supporting research for improving teaching practice.

6.3.2 Implications for future research

The present study has highlighted a number of gaps in the literature and raises some concerns which require additional investigation. The following section will propose future directions for research around the measurement of learning conceptions for experienced learners, the development of learning conceptions, and make suggestions

for how future work can further explore the relationship between students' learning within their programmes and the related assessment.

This research has identified a gap in research that quantitatively measures experienced learners' conceptions of learning. Continuing with the theme of a phenomenographic approach, master's and doctoral students', and also academics', views and experiences of learning should be comprehensively explored. From this a tool could be developed which would further unpack these more developed learning conceptions. A deeper understanding of the nuances of developed learning conceptions could then be examined in relation to approaches to learning and studying. This would allow for cross-discipline comparisons of learning as well as more exhaustive cross-cultural research. Outcomes from such research would provide academic staff with a better understanding of the diversity of experiences and approaches in their post-graduate classrooms and research consortiums.

The findings from this work provide some evidence to support the notion of a nested hierarchy. However, the development of learning conceptions, as students move through the education system, was not explored in detail, so further research is required to identify whether Säljö's (1979) nested hierarchy is currently relevant. There is some discussion in the literature regarding the development of learning conceptions as students become more experienced learners. However, there is a lack of longitudinal work in the field. There is some longitudinal work in the field of post-graduate learning. Boulton-Lewis, Marton, Lewis, and Wilss (2004) studied conceptions of learning and learning strategies of a small group of indigenous Australian undergraduate university students over a three-year period. They found that half of their population held higher-order conceptions in the first year, although this increased over time, yet they used highly repetitive strategies to learn, which did not change much over time. In a one-year study, Endedijk, Vermunt, Meijer, and Brekelmans (2014) found that post-graduate students did not become more self-regulating in their learning over time. However, after nearly 50 years of research into student learning in higher education, there is still no comprehensive work which details how students' learning develops in relation to the learning context. Researching students' understanding of learning as they progress through their national educational system and as they move from one learning culture to another would allow a deeper understanding of key influences in the

development of learning conceptions. The notion that learning context influences conceptions needs further unpacked to identify at what point students adapt their learning conceptions to fit the context. Longitudinal case studies of students' learning journeys could explain the impact of previous learning experiences on advanced learners' conceptions of learning.

Students in the focus groups in this research made several references to the significant changes in in teaching practices and assessment in comparison to their previous experiences. There is a growing literature on student transitions, from undergraduate to post-graduate (e.g. Tobell & O'Donnell, 2013) and for post-graduate international students moving from their home country (e.g. Menzies & Baron, 2014). The literature places greater focus on student identities, social adjustment and integration into university life than on learning per se. There is a need for further research around student transitions in learning culture and how this impacts on their learning conceptions. This is particularly relevant for international post-graduate students as they are engaged a dual adjustment, level of study and learning culture. It was clear from some students in focus groups, particularly those from Central Africa and Asia, that the teaching in their home country did not support independent thinking and criticality. For some of these students the teaching practice was a motivation for coming to study in the UK. It would be interesting and valuable to explore the learning conceptions of graduates in Asia and Central Africa. Motivations for learning and motivations for studying in the UK were discussed in the focus groups. The relationship between motivations for learning and learning conceptions is an under-researched area. The conceptual boundaries between them are blurred. A particular focus of future research should be placed on comparisons in learning conceptions between students who moved from their home country to undertake a post-graduate programme, those who remained to undertake post-graduate study in their home country, and those who did not pursue post-graduate study. This would be particularly pertinent to the 'broadening horizons' conception, which was scored highly by students in this research.

There is a wealth of literature on assessment practices in higher education, but there is no coherent discussion in the literature about appropriate criteria for post-graduate assessment. The main focus of the current assessment literature, particularly for

international students, is the value of peer and formative assessment and feedback practices. Given the pejorative statements about post-graduate assessment practices by the students in this research, there needs to be a programme of research which sets out to explore agencies for measuring advanced learners' learning on their programme. Contrary to previous studies, which found strong links between deeper learning strategies and achievement, this research found no link between conceptions of learning and academic success. This needs to be further explored, unpacking the relationship between advanced learning conceptions and a deep learning strategy and considering the appropriateness of the assessment for advanced learning. There is a distinct lack of consistency regarding the measurement of academic success. Numerous studies, which report that deeper learning approaches and higher learning conceptions predict academic success, implement a procedure which uses participants' self-report to determine academic achievement (e.g. Purdie & Hattie, 2002).

Newsome and Cooper (2016) hold the view that international students' cultural and social experiences are linked to the cultural, language and academic differences in addition to the recent geopolitical events that often stereotype international learners in the UK. There is a growing body of work which investigates the experiences of overseas students in UK universities, but this rarely extends to challenging stereotypes about their approaches to learning or their academic ability. Although the Asian students in this research performed slightly better than students from other cultural clusters at the end of their first trimester, this was not statistically significant. Current work researching integration and adjustment of international students should reach beyond social and cultural lived experiences outside the classroom and consider how academic teaching staff could better support learning strategies of overseas students. This could dispel myths and stereotypes around international students' learning and ability.

Although the Asian students in this research performed slightly better than the other cultural clusters, their predicted score was lower than students from other cultural clusters, except the European students. The relationship between how students predict they will perform, which is related to self-efficacy, and how they actually perform is ill-defined in the literature. Richardson, Abraham, and Bond (2012) distinguish between performance self-efficacy, when students are familiar with assessment formats, and

academic self-efficacy, when assessment challenges are unfamiliar and outcome is predicted on more generalised ability. Few other studies in the field address this distinction. Another concern regarding students' prediction of their achievement is related to the point in their learning journey at which they predict their outcome. A student who has experienced assessment on their course, or indeed, received feedback from their assessment is far better informed to predict their final grade than students who are early in their learning journey. In this research students were asked to predict their performance at the end of the first trimester in the third week of their course so they had not completed any assessment. By the time the focus groups were held some of the students had undertaken their first assessment on the course. Again, longitudinal research, asking students to predict their outcomes regularly over a period of time as they develop their understanding of, and engagement with, the course assessments, could unpack the relationship between performance and academic self-efficacy and academic achievement.

This work found no relationship between students' predicted academic performance and their academic achievement. However, there is strong support in the literature regarding self-efficacy and academic outcome, which requires further investigation, particularly in relation to the diverse cultural background of students. There is some cross-cultural work addressing students' self-efficacy, for example, Anderson (1999) reported that students from China accept more responsibility for interpersonal and non-interpersonal failures, and Lee and Seligman (1997) found that American students are more optimistic regarding their academic ability. If academic self-efficacy can predict performance (Chemers et al., 2001) and there are cultural differences in self-efficacy, further research is required to address any such potential cultural barriers which may influence academic performance.

This research found that the 'personal development' and 'broadening horizons' learning conceptions predicted how students expected they would perform at the end of their first trimester. These factors are likely to be embedded in self-efficacy theory and related research. Although an interesting finding and an area which requires further consideration, it was outwith the parameters of this research. Further research, which focuses on culture and performance self-efficacy, should consider the findings from this research and attempt to explain why students who score higher in items related to the

'broadening horizons' and 'personal development' learning conceptions would also predict they would perform better than students who scored lower on these items.

6.4 Limitations of this research

As with many doctoral research projects that are carried out over a period of time, a number of limitations can be identified. The main focus of the limitations sits within the procedure of this study. As previously discussed, the Conceptions of Learning Inventory (Purdie & Hattie, 2002) is not deemed the most appropriate tool for measuring leaning conceptions of experienced learners. The COLI was designed to measure learning conceptions of high school students in Australia, but it has since been widely used across all levels of education. It is one of the few tools measuring learning conceptions that has been used in culturally diverse classrooms and been used to explore learning conceptions across cultures, which is why it was selected for this research (see Chapter 3, section 3.5.1). However, as highlighted in the previous section, there is a need for an instrument which can investigate higher-order learning conceptions in more detail. Although the COLI has been used in several cross-cultural research projects, there is no research which explore students' or pupils' interpretation of the items. The participants in this research all spoke English fluently, however, from discussions in the focus groups it was clear that the students had different interpretations of 'learning as a duty'.

The second limitation of this study is related to how culture was identified. Most research on international students use nationality as the variable for measuring cultural differences. This is ill-defined, given the increased mobility and internationalisation of the global workforce. An increased number of students will have been raised in multi-cultural families and will have lived and studied in more than one country prior to registering on a post-graduate programme at a UK university. This study attempted to address some of these concerns by asking students in which country they went to school and where they did their first degree. Due to the number of nationalities of students in this research, a geographical approach was taken for clustering students into relevant cultures (see Chapter 3, section 3.4 for a detailed rationale of the cultural clustering). As indicated in section 6.3.2 of this chapter, there are likely to have been more differences within some cultural clusters than across cultural clusters, which is a common concern with cross-cultural research. Rienties et al. (2012) used an approach

which measured the 'degree of Westernness' of the international students in their study, which explored international students' academic performance in relation to academic and social integration. They measured ethnic identity with four open questions; mother's mother tongue, father's mother tongue, own mother tongue, and official citizenship(s). From this they identified four classifications: Dutch (the study was conducted in Holland); Western; mixed Western; and non-Western. This approach would address the fragmented approach to cultural clustering adopted in this research, given the ratio of participants to nationalities. However, it would not have identified differences between MENA culture and Central Africa and Asia. There is a wealth of literature regarding methodological problems with cross-cultural research, yet no publication has managed to adequately address these, particularly with smaller scale projects such as this study.

A mixed methods approach is considered to be appropriate for this research, however, focus groups are not without their disadvantages. Common limitations of focus groups' data are domination of the discussion by one or two participants and lack of consistency in outcomes across a series of focus groups, neither of which apply to this study. The major limitation of the focus groups in this research was the guidance provided to participants prior to arrival. To ensure that students were prepared for the discussions they were provided with Purdie et al.'s (1996) list of learning conceptions (for further details, see Chapter 3, section 3.8.4). In hindsight, this was perhaps counter-intuitive as most students had studied the list of learning conceptions prior to attending the focus groups, so when asked the first question, 'What does learning mean to you?' they reiterated Purdie et al.'s (1996) list of learning conceptions. This was later unpacked as the group further explored the meaning of learning. However, if repeated, it would be better not to influence students' initial responses by providing less prior guidance to the discussion. This is a clear example of one of the key weaknesses of collecting data in a face-to-face situation in which data provided by the participants in not anonymous and confidential, and respondents often feel peer pressure to provide what they perceive as the correct answer.

The composition of the focus groups may have influenced the outcomes of this research. As outlined in the methods section (see Chapter 3, section 3.5.3), the focus groups were structured to include a diversity of culture to encourage discussion around

the comparing and contrasting of learning experiences. Students who had ticked the box in the questionnaire stating that they agreed to participate in a focus group were allocated to a focus group in relation to their gender, culture and programme of study, to ensure that each group had an appropriate mix of students. Due to timetabling and other external demands, not all students were able to attend their allocated focus group. This resulted in only two students attending the first group, three in the second group and five in the third group. No student who had only experienced the UK educational system attended any focus group. It would have been preferable to have had a UK student who had completed the schooling and first degree in the UK influencing the discussion.

The timing of data collection may also have influenced the outcomes. Quantitative data were collected as soon as feasibly possible so that learning in the UK had minimal influence in students' conceptions of learning. However, this was completed in the third week of their programme, therefore students had already experienced lectures, laboratory classes and tutorials. The focus groups were held in week eight of the teaching trimester. This resulted in a detailed discussion around comparison with their previous learning experiences, particularly in relation to the assessment, a topic in which they were deeply immersed by the time the focus groups took place. This is not necessarily a limitation, but the scheduling of the questionnaire and the focus group discussions are very likely to have had an impact on their current views of learning.

Finally, a major limitation of this research, in relation to its contribution to the literature, is the blurred definition of the most basic learning conceptions, gaining information and increasing knowledge. Gaining information has quite a different meaning from increasing knowledge, however, this research has not clearly defined these two concepts. Increasing knowledge, as a learning conception, was first introduced by Säljö (1979), used also by Dall'Alba, and Beaty (1993) and Purdie et al. (1996). In their later study, Purdie and Hattie (2002) name their most basic learning conception 'gaining information', which includes five items (see Chapter 4, Table 4.7). As this research used the COLI (Purdie & Hattie, 2002), four of the same items were grouped into the factor which was termed, 'new information'. This distinction between these two conceptions was no satisfactorily unpacked in Purdie and Hattie's (2002) paper and is not addressed in this research.

6.5 Summary

This final chapter outlined the key findings by addressing each of the three research questions. The participants in this research had a broad understanding, but very different previous experiences, of learning. The findings relating to their fundamental learning conceptions align with other researchers in the field, however, the findings from the focus group activity contradicts the outcome of Purdie and Hattie's (2002) Conceptions of learning Inventory. Potential explanations for this are presented, although it is likely to be particular to this population of post-graduate health and life sciences students. The relationship between learning conceptions and learning context are discussed. This study did not identify a relationship between any of the learning conceptions and academic achievement, contrary to the literature. This may be related to the small population studied or that all the students in this research were experienced learners, holding an honours degree in science. Discussion in the focus groups raises the question of post-graduate assessment criteria, suggesting that the learning requirements of the post-graduate programmes do not promote higher-order learning conceptions. No relationship was found between how the students predicted they would perform and their actual academic achievement, which is explained by academic self-efficacy and performance self-efficacy theories. 'Broadening horizons' and 'personal development' were positively related to how students predicted they would perform in their first semester of their programme. There were minimal cultural differences in learning conceptions, and this research question raised the challenges of categorising students in cross-cultural research, which were discussed.

The chapter went on to consider the implications of this research, making recommendations with regards to local learning and teaching policies, international policies and staff development policies. The chapter recommended that academics critically consider how they assess post-graduate students and engage with the impact of the socio-cultural differences in UK university classrooms, and ensure that induction policies address pedagogical expectations and develop pedagogic approaches that explicitly engage with students' existing learning conceptions and those they seek to develop through the curriculum, pedagogies and assessments they use.

Implications for future research were addressed, with a specific focus on longitudinal work, which identifies how learning conceptions develop over time and in relation to

the learning context. Suggestions around further cross-cultural comparisons were identified, and furthermore, the differences and similarities between students, from the same culture, who choose to study in UK with students who engage in post-graduate study in their home country were explored. Finally some limitations of this research were highlighted.

The vast and unparalleled changes in higher education over the past few decades have greatly affected the ways in which UK HEIs provide university education, not only in the move towards mass access and internationalisation, but also in how policies and practices develop to support the needs of the students they teach. The shift in demand for post-graduate education programmes that welcome students from around the globe places further demands on teaching staff as they adapt to provide high-quality programmes to students from culturally diverse backgrounds. The implications of this change in relation to the student learning experience have been examined in this thesis, which studied the learning conceptions of an under-researched population of students. The findings indicate that there are aspects of these students' experiences which do not altogether fit with existing research on learning conceptions and require further exploration. It is hoped that the findings of this thesis will aid in improving the student learning experience of all students by informing higher education policy that aims to support the challenges faced by teaching staff and students alike in the context of these culturally diverse taught post-graduate programmes.

References

Adnett, N. (2010). The growth of international students and economic development: friends or foes? *Journal of Education Policy*, *25*(5), 625–637.

Alamdarloo, G. H., Moradi, S., & Dehshiri, G. R. (2013). The relationship between students' conceptions of learning and their academic achievement. *Psychology*, *4*(01), 44–49.

Allinson, C. W., & Hayes, J. (1996). The cognitive style index: A measure of intuition-analysis for organizational research. *Journal of Management Studies*, *33*(1), 119–135.

Anderson, B., Benjamin, H., & Fuss, M. A. (1994). The determinants of success in university introductory economics courses. *Journal of Economic Education*, *25*, 99–119.

Anderson, C. A. (1999). Attributional style, depression, and loneliness: A cross-cultural comparison of American and Chinese students. *Personality and Social Psychology Bulletin*, *25*(4), 482–499.

Apter, M. J., Mallows, R., & Williams, S. (1998). The development of the motivational style profile. *Personality and Individual Differences*, *24*(1), 7–18.

Ballard, B., & Clanchy, J. (1988). Literacy in the university: an 'anthropological' approach. In: G. Taylor, B. Ballard, V. Beasley, H. Bock, J. Clanchy, & P. Nightingale (Eds.), *Literacy by Degrees* (pp. 7–23). Milton Keynes: Society for Research into Higher Education and Open University Press.

Bandura, A. (1997). *Self-efficacy: The Exercise of Control*. New York, NY: W. H. Freeman.

Bandura, A., & Schunk, D. H. (1981). Cultivating competence, self-efficacy, and intrinsic interest through proximal self-motivation. *Journal of Personality and Social Psychology*, *41*(3), 586–598.

Barkley, E. (2010). *Student Engagement Techniques: A Handbook for College Faculty*. San Francisco: Jossey-Bass.

Bazeley, P. (2004). Issues in mixing qualitative and quantitative approaches to research. In R. Buber, J. Gadner, L. Richards (Eds.), *Applying Qualitative Methods to Marketing Management Research* (pp. 141–156). Basingstoke: Palgrave Macmillan.

BBC News. (2006). *Overseas students plans unveiled*. Retrieved from http://news.bbc.co.uk/1/hi/education/4917642.stm

Becher, T. (1994). The significance of disciplinary differences. *Studies in Higher Education, 19*(2), 151–161.

Benedict, R. (1934). *Patterns of Culture*. New York, NY: Mentor.

Biggs, J. B. (1987). *Student Approaches to Learning and Studying. Research Monograph*. Hawthorn, Australia: Australian Council for Educational Research Ltd.

Biggs, J., Kember, D., & Leung, D. Y. (2001). The revised two-factor study process questionnaire: R-SPQ-2F. *British Journal of Educational Psychology, 71*(1), 133–149.

Binet, A., & Simon, T. (1916). *The development of intelligence in children: The Binet-Simon Scale* (No. 11). Baltimore: Williams & Wilkins Company.

Bloom, D. E., Canning, D., & Chan, K. (2006). *Higher Education and Economic Development in Africa* (Vol. 102). Washington, DC: World Bank.

Bloor, M., Frankland, J., Thomas, M., & Robson, K. (2001). *Focus Groups in Social Research*. London: Sage Publications.

Bolsmann, C., & Miller, H. (2008). International student recruitment to universities in England: Discourse, rationales and globalisation. *Globalisation, Societies and Education, 6*(1), 75–88.

Booth, P., Luckett, P., & Mladenovic, R. (1999). The quality of learning in accounting education: the impact of approaches to learning on academic performance. *Accounting Education*, *8*(4), 277–300.

Boulton-Lewis, G. M., Marton, F., Lewis, D. C., & Wilss, L. A. (2004). A longitudinal study of learning for a group of indigenous Australian university students: Dissonant conceptions and strategies. Higher Education, 47(1), 91–111.

Brannen, J. (2005). *Mixed Methods Research: A discussion paper*. NCRM methods review papers, NCRM/005. Retrieved from http://eprints.ncrm.ac.uk/89/

British Educational Research Association (BERA) (2014). *Revised Ethical Guidelines for Educational Research.* Retrieved from https://www.bera.ac.uk/researchers-resources/publications/ethical-guidelines-for-educational-research-2011

British Psychological Society (BPS) (2009). *Code of Conduct: Ethical Principles and Guidelines.* Retrieved from http://www.bps.org.uk/system/files/Public%20files/bps_code_of_ethics_2009.pdf

Bryman, A. (2007). Barriers to integrating quantitative and qualitative research. *Journal of Mixed Methods Research*, *1*(1), 8–22.

Carroll, J., & Ryan, J. (2005). *Teaching International Students: Improving Learning for All*. Abingdon: Routledge.

Cashmore, A., Cane, C., & Cane, R. (2013). *Rebalancing Promotion in the HE Sector: Is teaching excellence being rewarded?* Genetics Education Networking for Innovation and Excellence: the UK's Centre for Excellence in Teaching and Learning in Genetics (GENIE CETL), University of Leicester: The Higher Education Academy.

Cassidy, S. (2004). Learning styles: An overview of theories, models, and measures. *Educational Psychology*, *24*(4), 419–444.

Cassidy, S., & Eachus, P. (2000). Learning style, academic belief systems, self-report student proficiency and academic achievement in higher education. *Educational Psychology*, *20*(3), 307–322.

Chan, K. W. (2007). Hong Kong teacher education students: Epistemological beliefs and their relations with conceptions of learning and learning strategies. *The Asia-Pacific Education Researcher*, 16(2), 199-214.

Chandler, A. (1989). *Obligation or Opportunity. Foreign Student Policy in Six Major Receiving Countries*. IEE Research Report Number 18. New York, NY: Institute of International Education.

Chemers, M. M., Hu, L. T., & Garcia, B. F. (2001). Academic self-efficacy and first-year college student performance and adjustment. *Journal of Educational Psychology*, *93*(1), 55–64.

Clark, E. E., & Ramsay, W. (1990). Problems of retention in tertiary education. *Education Research and Perspectives*, *17*, 47–57.

Cliff, A. F. (1998). Teacher-learners' conceptions of learning: Evidence of a "communalist" conception amongst postgraduate learners? *Higher Education*, *35*(2), 205–220.

Coffield, F., Moseley, D., Hall, E., & Ecclestone, K. (2004). *Learning styles and pedagogy in post-16 learning: A systematic and critical review*. London: The Learning and Skills Research Centre.

Colucci, E. (2007). "Focus groups can be fun": The use of activity-oriented questions in focus group discussions. *Qualitative Health Research*, *17*(10), 1422–1433.

Conway, M., & Ross, M. (1984). Getting what you want by revising what you had. *Journal of Personality and Social Psychology*, *47*(4), 738–748.

Cook, D. A. (2008). Scores from Riding's Cognitive Styles Analysis have poor test–retest reliability. *Teaching and Learning In Medicine, 2*(3), 225–229.

Creswell, J. W., & Plano Clark, V. L. (2007). Choosing a mixed methods design. In *Designing and Conducting Mixed Methods Research* (pp. 58–88). Thousand Oaks, CA: Sage.

Curry, L. (1983). *An organization of learning styles theory and constructs*. Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, Quebec, April 11–15, 1983.

Cuseo, J. (2007). The empirical case against large class size: adverse effects on the teaching, learning, and retention of first-year students. *The Journal of Faculty Development*, *21*(1), 5–21.

De Bello, T. C. (1990). Comparison of eleven major learning styles models: Variables, appropriate populations, validity of instrumentation, and the research behind them. *Reading, Writing, and Learning Disabilities*, *6*(3), 203–222.

Dunn, K. E., & Mulvenon, S. W. (2009). A critical review of research on formative assessment: The limited scientific evidence of the impact of formative assessment in education. *Practical Assessment, Research & Evaluation*, *14*(7), 1–11.

Dunn, R. (1990). Understanding the Dunn and Dunn learning styles model and the need for individual diagnosis and prescription. *Reading, Writing, and Learning Disabilities*, *6*(3), 223–247.

Dunn, R., & Dunn, K. (1992). *Teaching Secondary Students through their Individual Learning Styles*. Needham Heights, MA: Allyn and Bacon.

Ehrenberg, R. G., Brewer, D. J., Gamoran, A., & Willms, J. D. (2001). Class size and student achievement. *Psychological Science in the Public Interest*, *2*(1), 1–30.

Eklund-Myrskog, G. (1997). The influence of the educational context on student nurses' conceptions of learning and approaches to learning. *British Journal of Educational Psychology*, *67*(3), 371–381.

Eklund-Myrskog, G. (1998). Students' conceptions of learning in different educational contexts. *Higher Education*, *35*(3), 299–316.

Endedijk, M. D., Vermunt, J. D., Meijer, P. C., & Brekelmans, M. (2014). Students' development in self-regulated learning in postgraduate professional education: a longitudinal study. *Studies in Higher Education*, *39*(7), 1116–1138.

Enslin, P., & Hedge, N. (2008). International students, export earnings and the demands of global justice. *Ethics and Education*, *3*(2), 107–119.

Entwistle, N. (1984). Contrasting perspectives on learning. In F. Marton, D. Hounsell & N. Entwistle (Eds.), *The Experience of Learning* (pp. 1–17). Edinburgh: Scottish Academic Press.

Entwistle, N. (1997). Introduction: Phenomenography in higher education. *Higher Education Research & Development*, *16*(2), 127–134.

Entwistle, N. (2000). *Promoting deep learning through teaching and assessment: conceptual frameworks and educational contexts*. Paper presented at the TLRP Conference, Leicester, November, 2000.

Entwistle, N., & Ramsden, P. (1983). *Understanding Student Learning*. London: Croom Helm.

Entwistle, N., & Walker, P. (2000). Strategic alertness and expanded awareness within sophisticated conceptions of teaching. *Instructional Science*, *28*, 335–362.

Entwistle, N., & Walker, P. (2002). Strategic alertness and expanded awareness within sophisticated conceptions of teaching. In N. Hativa, & P. Goodyear (Eds.), *Teacher Thinking, Beliefs and Knowledge in Higher Education* (pp. 15–39). Dordrecht, The Netherlands: Springer Netherlands.

Entwistle, N., McCune, V., & Hounsell, J. (2002). *Approaches to studying and perceptions of university teaching-learning environments: Concepts, measures and preliminary findings. Occasional Report 1*. Enhancing Teaching-Learning Environments (ETL) Project.

Entwistle, N., McCune, V., & Walker, P. (2001). Conceptions, styles and approaches within higher education: Analytical abstractions and everyday experience. In R. J. Sternberg, & L-F. Zhang (Eds.), *Perspectives on Thinking, Learning, and Cognitive Styles* (pp. 103–136). Mahwah, NJ: Lawrence Erlbaum Associates.

Entwistle, N., Tait, H., & McCune, V. (2000). Patterns of response to an approaches to studying inventory across contrasting groups and contexts. *European Journal of Psychology of Education, 15*(1), 33–48.

Eraut, M. (1994). The acquisition and use of educational theory by beginning teachers. In G. R. Harvard, & P. Hodkinson (Eds.), *Action and Reflection in Teacher Education* (pp. 69–88). Norwood, NJ: Ablex Publishing.

Evans, C., Muijis, D., & Tomlinson, M., (2015). *Engaged student learning: High-impact strategies to enhance achievement.* Higher Education Academy. Retrieved from https://www.heacademy.ac.uk/system/files/engaged_student_learning_high-impact_pedagogies_1.pdf

Exeter, D. J., Ameratunga, S., Ratima, M., Morton, S., Dickson, M., Hsu, D., & Jackson, R., (2010). Student engagement in very large classes: The teachers' perspective. *Studies in Higher Education*, *35*(7), 761–775.

Ezebilo, E. E. (2012). Challenges in postgraduate studies: assessments by doctoral students in a Swedish university. *Higher Education Studies*, *2*(4), 49–57.

Felder, R. M. (1996). Active-inductive-cooperative learning: An instructional model for chemistry? *Journal of Chemical Education, 73*(9), 832.

Felder, R. M., & Brent, R. (2005). Understanding student differences. *Journal of Engineering Education, 94*(1), 57–72.

Felder, R. M., & Silverman, L. K. (1988). Learning and teaching styles in engineering education. *Engineering Education, 78*(7), 674–681.

Festinger, L. (1957). *A Theory of Cognitive Dissonance*. Stanford, CA: Stanford University Press.

Fielding, M. (1994). Valuing difference in teachers and learners: building on Kolb's learning styles to develop a language of teaching and learning. *The Curriculum Journal*, *5*(3), 393–417.

Francesca, C., Ana, L. N., Jérôme, M., & Frits, T. (2011). *Help Wanted? Providing and Paying for Long-term Care.* OECD Health Policy Studies (Vol. 2011). OECD Publishing.

Fuller, R (1999). Do university students' conceptions of learning really influence their learning? In Cornerstones: What do we value in higher education? Proceedings, July 12-15, Melbourne, Australia: Higher Education Research and Development Society of Australasia. Retrieved from http://www.herdsa.org.au/vic/cornerstones/pdf/Fuller.PDF

Gibbs, G., & Coffey, M. (2004). The impact of training of university teachers on their teaching skills, their approach to teaching and the approach to learning of their students. *Active Learning in Higher Education*, *5*(1), 87–100.

Giorgi, A. (1986). *A Phenomenological Analysis of Description of Concepts of Learning Obtained from a Phenomenographic Perspective*. Institutionen för Pedagogik, Göteborgs Universitet.

Goss, J. D., & Leinbach, T. R. (1996). Focus groups as alternative research practice: experience with transmigrants in Indonesia. *Area*, *28*(2), 115–123.

Gregorc, A. F. (1982). *Gregorc on Style*. Gabriel Systems, Incorporated.

Grimshaw, T. (2011). Concluding editorial: 'The needs of international students rethought – implications for the policy and practice of higher education'. *Teachers and Teaching: Theory and Practice*, *17*(6), 703–712.

Hagenauer, G., & Volet, S. E. (2014). Teacher–student relationship at university: an important yet under-researched field. *Oxford Review of Education*, 40(3), 370-388.

Haggis, T. (2003). Constructing images of ourselves? A critical investigation into 'approaches to learning' research in higher education. *British Educational Research Journal*, *29*(1), 89–104.

Haggis, T. (2009). What have we been thinking of? A critical overview of 40 years of student learning research in higher education. *Studies in Higher Education*, *34*(4), 377–390.

Hall, E. T. (1976). *Beyond Culture*. Garden City, NY: Anchor Press.

Hammersley, M. (1996). The relationship between qualitative and quantitative research: Paradigm loyalty versus methodological eclecticism. In J. T. E. Richardson (Ed.), *Handbook of Research in Psychology and the Social Sciences*. Leicester, UK: BPS Books.

Hammersley, M. (2000). Varieties of social research: A typology. *International Journal of Social Research Methodology*, *3*(3), 221-229.

Hammersley, M. (2005). *Troubles with triangulation*. Paper presented at Mixed Methods Workshop, ESRC, Research Methods Programme, Manchester, October.

Hasselgren, B., & Beach, D. (1997). Phenomenography—a "good-for-nothing brother" of phenomenology? Outline of an analysis. *Higher Education Research & Development, 16*(2), 191–202.

Hazel, E., Conrad, L., & Martin, E. (1997). Exploring gender and phenomenography. *Higher Education Research & Development*, *16*(2), 213–226.

Hedegard, J. M. (1981). The course perceptions questionnaire: development and some pilot research findings. *Law & Social Inquiry*, *6*(2), 463–531.

HEFCE, (2014-15) Staff record: Academic teaching qualifications. Retrieved from http://www.hefce.ac.uk/data/Year/2016/tqual/

Hénard, F., & Roseveare, D. (2012). *Fostering Quality Teaching in Higher Education: Policies and Practices.* OECD, Institutional Management in Higher Education. Retrieved from https://www.oecd.org/edu/imhe/QT%20policies%20and%20practices.pdf

Herrmann, N. (1982). Herrmann Brain Dominance Instrument. *Applied Services*.

Higher Education Academy. (2011) *Revised UK Professional Standards Framework* (UKPSF) in 2011. Retrieved from https://www.heacademy.ac.uk/ukpsf

Higher Education Academy (July, 2014). *Internationalising higher education framework.* Retrieved from https://www.heacademy.ac.uk/internationalising-higher-education-framework

Higher Education Information Database for Institutions (HEIDI) (2015). Retrieved from http://www.heidi.ac.uk/

Higher Education White Paper (January, 2003). The *Future of Higher Education*. Retrieved from http://www.educationengland.org.uk/documents/pdfs/2003-white-paper-higher-ed.pdf

Higher Education White Paper (May, 2016). *Higher education: success as a knowledge economy - white paper*. Retrieved from https://www.gov.uk/government/publications/higher-education-success-as-a-knowledge-economy-white-paper

Higher Education White Paper for England (June, 2011), *Higher Education: Students at the Heart of the System.* Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/523546/bis-16-265-success-as-a-knowledge-economy-web.pdf

Hofer, B. K., & Pintrich, P. R. (1997). The development of epistemological theories: Beliefs about knowledge and knowing and their relation to learning. *Review of Educational Research, 67*(1), 88–140.

Hofstede, G. (1980). *Culture's Consequences: International Differences in Work-related Values*. Beverly Hills, CA: Sage.

Hofstede, G. (1991). *Cultures and Organizations, Software of the Mind: Intercultural Cooperation and its Importance for Survival*. London: McGraw-Hill.

Hofstede, G. (1997) *Cultures and Organizations: Software of the Mind.* London: McGraw-Hill.

Hofstede, G. (2001). *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations across Nations* (2nd edn.). Thousand Oaks, CA: Sage.

Honey, P., & Mumford, A. (1992). *The Manual of Learning Styles.* Berkshire: Peter Honey.

Hounsell, D. (2011). *Graduates for the 21st Century: Integrating the Enhancement Themes*. Glasgow: Quality Assurance Agency Scotland.

Hounsell, D., McCune, V., Litjens, J., & Hounsell, J. (2005). *Enhancing Teaching-Learning Environments in Undergraduate Courses Project*. Biosciences, Edinburgh, Report 2. Edinburgh: University of Edinburgh.

House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V. (2004). *Culture, Leadership and Organizations: The GLOBE Study of 62 Societies*. Thousand Oaks, CA: Sage.

Howarth, C., Cornish, F., & Gillespie, A. (2015). Making community: diversity, movement and interdependence. In G. Sammut, E. Andreouli, G. Gaskell, & J. Valsiner (Eds.), *The Cambridge Handbook of Social Representations* (pp. 179–192). Cambridge: Cambridge University Press.

Huang, C. (2013). Gender differences in academic self-efficacy: a meta-analysis. *European Journal of Psychology of Education*, *28*(1), 1–35.

Ilieva, J., & Peak, M. (2016). *The Shape of Global Higher Education: National Policies Framework for International Engagement*. London: The British Council. Retrieved from https://www.britishcouncil.org/sites/default/files/f310_tne_international_higher_education_report_final_v2_web.pdf

Jackson, C. J. (2002). *Learning Styles and its measurement: An applied neuropsychological model of learning for business and education*. Sydney, Australia: Cymeon.

Jones, E., & Brown, S. (2007). *Internationalising Higher Education*. Abingdon: Routledge.

Kember, D. (1997). A reconceptualisation of the research into university academics' conceptions of teaching. *Learning and Instruction*, *7*(3), 255–275.

Kember, D., & Gow, L. (1991). A challenge to the anecdotal stereotype of the Asian student. *Studies in Higher Education*, *16*(2), 117–128.

Kember, D., & Gow, L. (1990). Cultural specificity of approaches to study. *British Journal of Educational Psychology*, *60*(3), 356–363.

Kember, D., & Yan, L. (2001). Avoiders and engagers: a characterisation of the learning approaches of-out-of-class student groups. Paper given at *Higher Education Close Up: Fine-grained Qualitative Research in Higher Education*, University of Lancaster, July.

Kerry, T., & McDermott, P. (2010). Enhancing Quality in Postgraduate Work. In T. Kerry (Ed.), *Meeting the Challenges of Change in Postgraduate Education*. York: Continuum.

King, P. M., & Kitchener, K. S. (1994). *Developing Reflective Judgment: Understanding and Promoting Intellectual Growth and Critical Thinking in Adolescents and Adults.* San Francisco, CA: Jossey-Bass.

King, P. M., & Kitchener, K. S. (2004). The reflective judgment model: Twenty years of research on epistemic cognition. In B. K. Hofer, & P. R. Pintrich (Eds.), *Personal Epistemology: The Psychology of Beliefs about Knowledge and Knowing* (pp. 37 – 62). London: Routledge.

Kitzinger, J. (1995). Qualitative research. Introducing focus groups. *British Medical Journal*, 311(7000), 299–302.

Kolb, D. A. (1976). Management and the learning process. *California Management Review*, *18*(3), 21–31.

Kolb, D. A. (1984). Experiential learning. Englewoods Cliffs, NJ: Prentice Hall.

Kolb, D. A. (2005). *The Kolb Learning Style Inventory—Version 3.1: Self-scoring and interpretation booklet*. Boston, MA: Hay Group.

Krueger, R. A. (1994). *Focus Groups: A Practical Guide for Applied Research* (2nd ed.). Thousand Oaks, CA: Sage Publications Inc.

Krueger, R. A., & Casey, M. A. (2000). Overview of focus groups. In R. A. Krueger (Ed.), *Focus Groups: A Practical Guide for Applied Research*, (3rd Edition, pp. 3–19). Thousand Oaks, CA: Sage Publications Inc.

Laird, T. F. N., Shoup, R., Kuh, G. D., & Schwarz, M. J. (2008). The effects of discipline on deep approaches to student learning and college outcomes. *Research in Higher Education*, *49*(6), 469–494.

Lave, J., & Wenger, E. (1999). Learning and pedagogy in communities of practice. In J. Leach, & B. Moon (Eds.), *Learners and Pedagogy* (pp. 21–33). London: Paul Chapman Publishing Ltd.

Lee, Y. T., & Seligman, M. E. (1997). Are Americans more optimistic than the Chinese? *Personality and Social Psychology Bulletin*, *23*(1), 32–40.

Lewin, K. (1946). *Behavior and Development as a Function of the Total Situation.* Hoboken, NJ: John Wiley & Sons, Inc.

Li, G., Chen, W., & Duanmu, J-L. (2010). Determinants of International Students' Academic Performance: A Comparison Between Chinese and Other International Students. *Journal of Studies in International Education*, *14*(4), 389–405.

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of psychology*.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry* (Vol. 75). Sage.

Lindblom-Ylänne, S. (2004). Raising students' awareness of their approaches to study. *Innovations in Education and Teaching International*, *41*(4), 405–421.

Long, T., & Johnson, M. (2000). Rigour, reliability and validity in qualitative research. *Clinical effectiveness in nursing*, *4*(1), 30-37

Luxon, T., & Peelo, M. (2009). Internationalisation: Its implications for curriculum design and course development in UK higher education. *Innovations in Education and Teaching International*, *46*(1), 51–60.

Maddux, J. E. (1995). Self-efficacy theory: An introduction. In J. E. Maddux (Ed.), *Self-efficacy, Adaptation, and Adjustment: Theory, Research and Application* (pp. 3–33). New York, NY: Springer US.

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion and motivation. *Psychological Review*, *98,* 244–253.

Martin, E., & Ramsden, P. (1987). Learning skills, or skill in learning? In J. T. E. Richardson, M. W. Eysenck, & D. W. Piper (Eds.), *Student Learning: Research in Education and Cognitive Psychology*, (pp. 155–167). Guildford: Society for Research into Higher Education; Maidenhead: Open University Press.

Marton, F. (1981). Phenomenography – Describing conceptions of the world around us. *Instructional Science, 10*(2), 177–200.

Marton, F. (1986) Phenomenography – A research approach to investigating different understandings of reality, *Journal of Thought, 21*(3), 28–49.

Marton, F., & Booth, S. A. (1997). *Learning and Awareness*. Mahwah, NJ: Lawrence Erlbaum Associates Inc.

Marton, F., Dall'Alba, G., & Beaty, E. (1993). Conceptions of Learning. *International Journal of Educational Research, 19*(3), 277–300.

Marton, F., Dall'Alba, G., & Tse, K. L. (1993). *The Paradox of the Chinese Learner* (Occasional Paper No. 93.1). Victoria, Australia: Royal Melbourne Institute of Technology, Educational Research and Development Unit.

Marton, F., Dall'Alba, G., & Tse, L. K. (1992). Solving the paradox of the Asian learner. Paper presented at the *Fourth Asian Regional Congress of Cross-Cultural Psychology, Kathmandu*, January.

Marton, F., & Säljö, R. (1976). On qualitative differences in learning: I – outcome and process. *British Journal of Educational Psychology*, *46*(1), 4–11.

Marton, F., & Säljö, R. (1984). Approaches to learning. In F. Marton, D. Hounsel, & N. Entwistle (Eds.), *The Experience of Learning* (pp. 36–55). Edinburgh: Scottish Academic Press.

McChlery, S., & Visser, S. (2009). A comparative analysis of the learning styles of accounting students in the United Kingdom and South Africa. *Research in Post-Compulsory Education*, *14*(3), 299-315.

McClendon, M. J. (1991). Acquiescence and recency response-order effects in interview surveys. *Sociological Methods & Research*, *20*(1), 60-103.

McInnis, C., James, R., & McNaught, C. (1995). *First Year on Campus: Diversity in the Initial Experiences of Australia Undergraduates*. Melbourne: University of Melbourne Press.

McWilliam, E. L., Taylor, P., Thomson, P., Green, B., Maxwell, T., Wildy, H., & Simons, D. (2002). *Research Training in Doctoral Programs-What can be learned from Professional Doctorates?* Commonwealth of Australia.

Menzies, J. L., & Baron, R. (2014). International postgraduate student transition experiences: the importance of student societies and friends. *Innovations in Education and Teaching International*, *51*(1), 84–94.

Mertens, D. (1998). *Research Methods in Education and Psychology: Integrating Diversity with Quantitative and Qualitative Approaches*. Thousand Oaks, CA: Sage.

Middendorf, J., & Pace, D. (2004). Decoding the disciplines: A model for helping students learn disciplinary ways of thinking. *New Directions for Teaching and Learning*, *98*(Summer), 1–12.

Mogashana, D., Case, J. M., & Marshall, D. (2012). What do student learning inventories really measure? A critical analysis of students' responses to the Approaches to Learning and Studying Inventory. *Studies in Higher Education*, *37*(7), 783–792.

Morgan, D. L., & Krueger, R. A. (1993). When to use focus groups and why. In D. L. Morgan (Ed.) *Successful Focus Groups: Advancing the State of the Art* (pp. 3–19). Thousand Oaks, CA: Sage.

Morgan, D. L., & Krueger, R. A. (1998). *Analyzing and Reporting Focus Group Results* (Focus Group Kit 6). Thousand Oaks, CA: Sage.

Morse, J. M. (2003). Principles of mixed method and multi-method research design. In C. Teddlie, & A. Tashakkori (Eds.), *Handbook of Mixed Methods in Social and Behavioural Research* (pp. 189–208). London: Sage.

Mulryan-Kyne, C. (2010). Teaching large classes at college and university level: Challenges and opportunities. *Teaching in Higher Education, 15*(2), 175–185.

Murray-Harvey, R. (1994). Learning styles and approaches to learning: distinguishing between concepts and instruments. *British Journal of Educational Psychology, 64*(3), 373–388.

Neumann, R., Parry, S., & Becher, T. (2002). Teaching and learning in their disciplinary contexts: A conceptual analysis. *Studies in Higher Education, 27*(4), 405–417.

Newsome, L. K., & Cooper, P. (2016). International Students' Cultural and Social Experiences in a British University: "Such a hard life [it] is here". *Journal of International Students, 6*(1), 195–215.

Norton, L. S., & Crowley, C. M. (1995). Can students be helped to learn how to learn? An evaluation of an approaches to learning programme for first-year degree students. *Higher Education, 29*(3), 307–328.

Oakley, A. (1999). Paradigm wars: some thoughts on a personal and public trajectory. *International Journal of Social Research Methodology, 2*(3), 247–254.

O'Donnell, V. L., Tobbell, J., Lawthom, R., & Zammit, M. (2009). Transition to postgraduate study Practice, participation and the widening participation agenda. *Active Learning in Higher Education, 10*(1), 26–40.

OECD. (2008). *Tertiary education for the knowledge society OECD—Thematic Review of Tertiary Education: Synthesis Report*. Retrieved from http://www.oecd.org/dataoecd/20/4/40345176.pdf

Parsons, D., Hill, I., Holland, J., & Willis, D. (2012). *Impact of Teaching Development Programmes in Higher Education*. York: Higher Education Academy.

Pask, G. (1976). Styles and strategies of learning. *British Journal of Educational Psychology*, 46, 128–48.

Pask, G. (1988). Learning strategies, teaching strategies, and conceptual or learning style. In R. R. Schmeck (Ed.), *Learning Strategies and Learning Styles* (pp. 83–100). New York, NY: Springer US.

Pearson (2014) *Data Bank.* Retrieved from: http://thelearningcurve.pearson.com/data-hub/data-bank/education-input-indicators

Perry, W. G. Jr. (1968). *Patterns of development in thought and values of students in a liberal arts college: A validation of a scheme* (Final Report Project No. 5–0825, Contract No. SAE–8873). Cambridge, MA: Bureau of Study Counsel, Harvard University. (ERIC Document Reproduction Service No. ED 024315).

Perry, W. G. Jr. (1970) *Forms of Intellectual and Ethical Development in the College Years*. New York, NY: Holt, Rinehart and Winston.

Piaget, J. (1959). *The Language and Thought of the Child.* London: Routledge & Kegan Paul.

Piaget, J., & Inhelder, B. (1969). *The Psychology of the Child* (Vol. 5001). New York, NY: Basic Books.

Pratt, D. D. (1992). Chinese conceptions of learning and teaching: A Westerner's attempt at understanding. *International Journal of Lifelong Education, 11*(4), 301–319.

Pratt, D. D., Kelly, M., & Wong, W. S. (1999). Chinese conceptions of 'effective teaching' in Hong Kong: Towards culturally sensitive evaluation of teaching. *International Journal of Lifelong Education, 18*(4), 241–258.

Prosser, M. (1993) Phenomenography and principles and practices of learning. *Higher Education Research and Development, 12*(1), 21–31.

Prosser, M., & Webb, C. (1994). Relating the Process of Undergraduate Essay Writing to the Finished Product. *Studies in Higher Education*, *19*(2), 125–38.

Psacharopoulos, G., & Patrinos, H. (2002). *Returns to investment in education: a further update.* World Bank Policy Research Working Paper 2881. Washington, DC: World Bank.

Purdie, N. M., & Hattie, J. (2002). Assessing students' conceptions of learning. *Australian Journal of Educational and Developmental Psychology*, *2*, 17–32.

Purdie, N., Hattie, J., & Douglas, G. (1996). Student conceptions of learning and their use of self-regulated learning strategies: A cross-cultural comparison. *Journal of Educational Psychology*, *88*(1), 87–100.

QAA. (2014). *The UK Quality Code for Higher Education*. Retrieved from http://www.qaa.ac.uk/assuring-standards-and-quality/the-quality-code

QAA, Scotland. (2013). *What is mastersness?* Discussion paper. Report of the Scottish Higher Education Enhancement Committee Learning from International Practice. Retrieved from http://www.enhancementthemes.ac.uk/docs/report/what-is-mastersness.pdf

Ramsden, P., Beswick, D., & Bowden, J. (1987). Learning processes and learning skills. In J. T. E. Richardson, M. W. Eysenck, & D. W. Piper (Eds.), *Student learning: Research in Education and Cognitive Psychology* (pp. 168–176). London: Society for Research into Higher Education.

Ramsden, P., & Entwistle, N. J. (1981). Effects of academic departments on students' approaches to studying. *British Journal of Educational Psychology*, *51*(3), 368-383.

Rhine, S. L. (1989). The effect of state mandates on student performance. *The American Economic Review*, *79*(2), 231–235.

Richardson, J. T. E. (1990). Reliability and replicability of the Approaches to Studying Questionnaire. *Studies in Higher Education*, *15*(2), 155–168.

Richardson, J. T. (1994). Mature students in higher education: I. A literature survey on approaches to studying. *Studies in Higher Education*, *19*(3), 309–325.

Richardson, J. T. (2000). *Researching Student Learning: Approaches to Studying in Campus-based and Distance Education*. Buckingham: Society for Research into Higher Education and Open University Press.

Richardson, J. T. (2004). Methodological issues in questionnaire-based research on student learning in higher education. *Educational Psychology Review*, *16*(4), 347–358.

Richardson, J. T. (2005a). Students' approaches to learning and teachers' approaches to teaching in higher education. *Educational Psychology*, *25*(6), 673–680.

Richardson, J. T. (2005b). Instruments for obtaining student feedback: A review of the literature. *Assessment & Evaluation in Higher Education*, *30*(4), 387–415.

Richardson, J. T. (2012). The role of response biases in the relationship between students' perceptions of their courses and their approaches to studying in higher education. *British Educational Research Journal*, *38*(3), 399-418.

Richardson, J.T.E., McLeod-Gallinger, J., McKee, B.G., & Long, G.L. (1999). Approaches to studying in deaf and hearing students in higher education. *Journal of Deaf Studies and Deaf Education*, *5*, 156–173.

Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: a systematic review and meta-analysis. *Psychological Bulletin*, *138*(2), 353.

Riding, R. J. (2002). *School Learning and Cognitive Style*. Abingdon: David Fulton Publishers.

Riding, R., & Cheema, I. (1991). Cognitive styles – an overview and integration. *Educational Psychology*, *11*(3&4), 193–215.

Riding, R., & Rayner, S. (1998). *Cognitive Styles and Learning Strategies: Understanding Style Differences in Learning and Behaviour*. Abingdon: Routledge.

Rienties, B., Beausaert, S., Grohnert, T., Niemantsverdriet, S., & Kommers, P. (2012). Understanding academic performance of international students: the role of ethnicity, academic and social integration. *Higher Education*, *63*(6), 685–700.

Ritchie, Jane, et al., eds. *Qualitative research practice: A guide for social science students and researchers*. Sage, 2013.

Robertson, C. J. & Hoffman, J. J. 2000, How different are we? An investigation of Confucian values in the United States. *Journal of Managerial Issues*, *12*(1) 34–47.

Robson, C. (2011). Real world research 3 rd Ed. *UK: Wiley*.

Ryan, J., & Carroll, J. (2005a). 'Canaries in the coalmine': International students in Western universities. In J. Carroll, & J. Ryan (Eds.), *Teaching International Students: Improving Learning for All* (pp. 3–10). Abingdon: Routledge.

Ryan, J., & Carroll, J. (2005b). *Teaching International Students: Improving Learning for All*. Abingdon: Routledge

Säljö, R. (1979). Learning about learning. *Higher Education*, *8*(4), 443–451.

Säljö, R. (1987). The educational construction of learning. In J. T. E. Richardson, M. W. Eysench, & D. W. Piper (Eds.), *Student Learning: Research in Education and Cognitive Psychology* (pp. 101–108). Milton Keynes: Society for Research into Higher Education and Open University Press.

Säljö, R. (1994) Minding action: Conceiving of the world versus participating in cultural practices. *Nordisk Pedagogik*, *2*(94), 71–80.

Saroyan, A., Dagenais, J., & Zhou, Y. (2009). Graduate students' conceptions of university teaching and learning: formation for change. *Instructional Science*, *37*(6), 579–600.

Schmeck, R. R. (1988). *Learning Strategies and Learning Styles*. New York, NY: Springer US.

Schommer, M. (1990). Effects of beliefs about the nature of knowledge on comprehension. *Journal of Educational Psychology*, *82*(3), 498–504.

Schweisfurth, M., & Gu, Q. (2009). Exploring the experiences of international students in UK higher education: possibilities and limits of interculturality in university life. *Intercultural Education*, *20*(5), 463–473.

Scott, P. (1995). *The Meanings of Mass Higher Education*. Buckingham: The Society for Research into Higher Education and Open University Press.

Snow, C. P. (1963). *The Two Cultures: And a Second Look*. Cambridge: Cambridge University Press.

Silverman, D. (2013). *Doing qualitative research: A practical handbook*. SAGE Publications Limited.

Sparrow, B., Liu, J., & Wegner, D. M. (2011). Google effects on memory: Cognitive consequences of having information at our fingertips. *Science*, *333*(6043), 776–778.

Spates, C. R., & Kanfer, F. H. (1977). Self-monitoring, self-evaluation, and self-reinforcement in children's learning: A test of a multistage self-regulation model. *Behavior Therapy*, *8*(1), 9–16.

Spearman, C. (1927). *The Abilities of Man: Their Nature and Measurement*. MacMillan and Co.

Sternberg, R. J. (1999). *Thinking Styles*. Cambridge: Cambridge University Press.

Stoet, G., & Geary, D. C. (2015). Sex differences in academic achievement are not related to political, economic, or social equality. *Intelligence*, *48*, 137–151.

Svensson, L. (1997). Theoretical foundations of phenomenography. *Higher Education Research & Development*, *16*(2), 159–171.

Symonds, J. E., & Gorard, S. (2008). The death of mixed methods: research labels and their casualties. Paper presented at the British Educational Research Association Annual Conference, September.

Teddlie, C., & Tashakkori, A. (2003). Major issues and controversies in the use of mixed methods in the social and behavioural sciences. In C. Teddlie, & A.

Tashakkori (Eds.), *Handbook of Mixed Methods in Social and Behavioural Research* (pp. 3–50). London: Sage.

Teichler, U. (1996). Comparative higher education: Potentials and limits. *Higher Education, 32*(4), 431–465.

Tobbell, J., & O'Donnell, V. (2013) Transition to postgraduate study: postgraduate ecological systems and identity. *Cambridge Journal of Education, 43*(1), 123–138.

Triandis, H. C. (1994). *Culture and Social Behavior*. London: McGraw-Hill.

Trigwell, K., Prosser, M., & Waterhouse, F. (1999). Relations between teachers' approaches to teaching and students' approaches to learning. *Higher Education, 37*(1), 57–70.

Tynjala, P. (1997). Developing education students' conceptions of the learning process in different learning environments. *Learning and Instruction, 7*, 277–292.

Universities Scotland (2008). University research: facts & figures. Retrieved from http://www.universities-scotland.ac.uk/uploads/briefings/ResearchFF120511.pdf

Universities UK (2014a). Pattern and Trends in UK Higher Education. Retrieved from http://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2014/patterns-and-trends-in-uk-higher-education-2014.pdf

Universities UK (2014b). *International Students in Higher Education: The UK and its Competition.* Retrieved from http://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2014/international-students-in-higher-education.pdf

Universities, UK (2014c). The impact of universities on the UK economy. Retrieved from http://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2014/the-impact-of-universities-on-the-uk-economy.pdf

Van Herk, H., Poortinga, Y. H., & Verhallen, T. M. (2004). Response styles in rating scales: Evidence of method bias in data from six EU countries. *Journal of Cross-Cultural Psychology, 35*(3), 346-360.

Van Rossum, E. J., Deijkers, R., & Hamer, R. (1985). Students' learning conceptions and their interpretation of significant educational concepts. *Higher Education, 14*(6), 617-641.

Van Rossum, E. J., Deijkers, R., & Hamer, R. (1984). Aanpassen of stimuleren. – over Kunst en Kunde. [Adaptation or Stimulation – about Art and Ability]. Onderzoek van Onderwijs, 13(4), 41–44.

Van Rossum, E. J., & Hamer, R. N. (2010). *The meaning of learning and knowing*. Sense publishers.

Van Rossum, E. J., & Schenk, S. M. (1984). The relationship between learning conception, study strategy and learning outcome. *British Journal of Educational Psychology, 54*(1), 73–83.

Van Rossum, E. J., & Taylor, I. P. (1987). *The relationship between conceptions of learning and good teaching: A scheme of cognitive development.* Paper presented at the Annual Meeting of the American Educational Research Association, Washington DC, April.

Vermunt, J. D. (1996). Metacognitive, cognitive and affective aspects of learning styles and strategies: a phenomenographic analysis. *Higher Education, 31*(1), 25–50.

Vermunt, J. D. H. M. (1994). *Inventory of Learning Styles in higher education: scoring key for the Inventory of Learning Styles in higher education*. Tilburg, Netherlands: Tilburg University Department of Educational Psychology.

Vickers, P., & Bekhradnia, B. (2007). *The Economic Costs and Benefits of International Students*. Oxford: Higher Education Policy Institute. Retrieved from http://heer.qaa.ac.uk/SearchForSummaries/Summaries/Pages/INT29.aspx

Watkins, D. A., & Biggs, J. B. (1996). *The Chinese Learner: Cultural, Psychological, and Contextual Influences*. Hong Kong: Comparative Education Research Centre; Melbourne, Australia: The Australian Council for Educational Research.

Watkins, D. A., & Biggs, J. B. (2001). The paradox of the Chinese learner and beyond. In D. A. Watkins, & J. B. Biggs (Eds.), *Teaching the Chinese learner: Psychological and Pedagogical Perspectives*, (pp. 3–23). Hong Kong: Comparative Education Research Centre.

Watkins, D., & Dahlin, B. (1997). Assessing study approaches in Sweden. *Psychological Reports, 81*(1), 131–136.

Watkins, D., Yau, J., Dahlin, B., & Wondimu, H. (1997). The twenty statements test: Some measurement issues. *Journal of Cross-Cultural Psychology, 28*(5), 626–633.

Webb, G. (1997). Deconstructing deep and surface: Towards a critique of phenomenography. *Higher Education, 33*(2), 195–212.

Williams, M. L., Waldauer, C., & Duggal, V. G. (1992). Gender differences in economic knowledge: An extension of the analysis. *Journal of Economic Education, 23*, 219–231.

Witkin, H. A., Moore, C. A., Goodenough, D. R., & Cox, P. W. (1977). Field-dependent and field independent cognitive styles and their educational implications. *Review of Educational Research, 47*(1) 1–64.

Woods, D. R., Hrymak, A. N., & Wright, H. M. (2000). Approaches to learning and learning environments in problem-based versus lecture-based learning. *age, 5*, 2.

Wursten, H., & Jacobs, C. (2013). *The impact of culture on education*. The Hofstede Centre, Itim International.

Yamazaki, Y. (2005). Learning styles and typologies of cultural differences: A theoretical and empirical comparison. *International Journal of Intercultural Relations, 29*(5), 521–548.

Young, T. J., Sercombe, P. G., Sachdev, I., Naeb, R., & Schartner, A. (2013). Success factors for international postgraduate students' adjustment: exploring the roles of intercultural competence, language proficiency, social contact and social support. *European Journal of Higher Education*, *3*(2), 151–171.

Zimmerman, B. J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting. *American Educational Research Journal*, *29*(3), 663–676.

Zimmerman, B. J., & Martinez-Pons, M. (1986). Development of a structured interview for assessing student use of self-regulated learning strategies. *American Educational Research Journal*, *23*(4), 614–628.

Zimmerman, B. J., & Martinez-Pons, M. (1990). Student differences in self-regulated learning: Relating grade, sex, and giftedness to self-efficacy and strategy use. *Journal of Educational Psychology*, *82*(1), 51–59.

Appendices

Appendix I: Table of participants who completed the COLI by programme and gender

	Programme of study	Men	Women	Total
1	MSc Bimolecular and Biomedical Sciences	5	4	9
2	MSc Clinical Microbiology	5	13	18
3	MSc Clinical Health and Nutrition	1	6	7
4	MSc Diabetes Care and Management	4	6	10
5	MSc Food Bioscience	3	13	16
6	MSc Life Sciences	1	4	5
7	MSc Pharmacology	4	9	13
8	MSc Clinical Ophthalmology	7	7	12
9	MSc Environmental Management	13	8	21
10	MSc Sustainable Energy	1	1	2
11	MSc Waste Management	2	12	14
14	MSc Occupational Therapy	5	9	14
15	MSc Physiotherapy	1	14	15

Appendix II: Table of participants who completed the COLI by nationality, country of secondary education, country completed first degree and cultural cluster

Nationality		High school country		Fist degree country		Cultural cluster
British	36	UK	33	UK	33	European (*n* = 58)
		South Africa	1	UK	1	
		British Military (Germany)	1	Slovakia	1	
		Iran	1	UK	1	
Italian	2	Italy	2	Italy	1	
				UK	1	
Irish	3	Ireland	3	Ireland	2	
					1	
Danish	1	Denmark	1	Norway	1	
French	3	France	3	France	3	
Polish	4	Poland	4	Poland	2	
				UK	2	
Spanish	3	Spain	3	Spain	2	
				UK	1	
Portuguese	1	Portugal	1	Portugal	1	
German	1	United Arab Emirate	1	UK	1	
Greek	3	Greece	3	Greece	3	
Romanian	1	Romania	1	Romania	1	
Ukraine	1	Ukraine	1	Ukraine	1	n/a
Burmese	7	Myanmar	7	Myanmar	7	Asian (*n* = 28)
Chinese	3	China	3	China	2	
Indian	6	India	5	India	5	
				Pakistan	1	
Pakistani	2	Pakistan	2	Pakistan	2	
Sri Lankan	3	Libya	1	Libya	1	
		Sri Lanka	1		1	
Malaysian	2	Malaysia	2	Malaysia	2	
Indonesian	2	Indonesia	2	Indonesia	2	
Bangladeshi	4	Bangladesh	4	Bangladesh	4	
Saudi Arabian	16	Saudi Arabia	18	Saudi Arabia	13	Middle East North African (*n* = 28)
				Jordan	1	
		Ireland	1	Ireland	1	
Omani	2	Oman	2	Oman	1	
				Saudi Arabia	1	
Egyptian	2	Egypt	2	Egypt	1	
				UK	1	
Kuwaiti	4	Kuwait	4	Kuwait	3	
				UK	1	
Jordanian	2	Jordan	2	Jordan	2	
Libya	2	Libyan	2	Libyan	2	
Iraqi	1	Iraq	1	Iraq	1	
Ugandan	1	Uganda	1	Uganda	1	Central African (*n* = 29)
Zimbabwean	1	Zimbabwe	1	UK	1	
Ghanaian	1	Ghana	1	UK	1	
Nigerian	26	Nigeria	26	Nigeria	24	
				Malaysia	2	
American	2	USA	2	USA	2	North American (*n* = 12)
Canadian	10	Canada	10	Canada	10	

Appendix IIIa: Email invitation for students selected to participate in focus group

Dear [enter student name]

You may remember a few weeks ago you kindly completed an online questionnaire in one of your lab classes about your understanding and experience of learning. The final question asked you if you would be willing to participate in a focus group (a one hour group discussion with the researcher and four other students) to further explore conceptions of learning, to which you agreed. I have completed my questionnaire data collection phase and am now running the focus groups. You have been selected to participate in a focus group on Wednesday 19th November between 2pm and 3pm in W819 (the top floor of the Hamish Wood building, turn left as you exit the lift – please arrive in time to commence discussion at 2pm). The discussion will explore your experiences of learning and we will talk about learning conceptions (see bullet points below – this is for information only). No preparation is required and there are no correct answers or expected opinions. The discussion will be recorded but everything you say will be completely confidential and your contribution will not be identified out with the group; no one other than the researcher, me, will listen to the recording. The focus groups will be conducted in a warm and inclusive environment; it will provide an opportunity for you to think about your own learning and find out about others' approaches.

Tea, coffee, sandwiches and cakes will be provided.

I would appreciate if you would let me know at your earliest convenience if you are able to attend.

I look forward to meeting you again and thoroughly appreciate your support for my research.

Kind regards,

Karen

Appendix IIIb: List of learning conceptions (Purdie, Hattie, & Douglas, 1996) to provide the participants with a framework for the proposed discussions

Conceptions of Learning:

- ☐ increasing one's knowledge
- ☐ memorizing and reproducing
- ☐ using information as a means to an end
- ☐ understanding
- ☐ seeing something in a different way
- ☐ personal fulfilment
- ☐ a duty
- ☐ a process not bound by time or context
- ☐ developing social competence

(Purdie and Hattie, 1996)

Appendix IV: Table of students invited to participate in focus groups by programme, nationality, cultural cluster, age and gender

Participant Number	Focus Group	Programme	Nationality	Cultural cluster	Age	Sex
1	1	Clinical Microbiology	Kuwait	MENA	30	F
2	1	Pharmacology	Saudi	MENA	29	M
3	1	Pharmacology	British	European	29	F
4	1	Biomolecular and Biomedical Sciences	Nigerian	Central African	27	M
5	1	Clinical Ophthalmology	Indian	Asian	31	F
6	1	Diabetes Care & Management	Bangladeshi	Asian	26	F
7	2	Pharmacology	Chinese	Asian	22	F
8	2	Clinical Microbiology	Nigerian	Central African	26	F
9	2	Pharmacology	Egyptian	MENA	26	M
10	2	Food Bioscience	Indonesian	Asian	23	F
11	2	Clinical Ophthalmology	Danish	European	30	F
12	2	Diabetes Care & Management	Jordanian	MENA	29	M
13	3	Pharmacology	Chinese	Asian	41	F
14	3	Food Bioscience	Ghanaian	Central African	24	F
15	3	Food Bioscience	Greek	European	27	F
16	3	Clinical Microbiology	Omani	MENA	29	M
17	3	Pharmacology	Nigerian	Central African	26	F
18	3	Clinical Microbiology	Bangladeshi	Asian	27	M

Appendix V: Table of focus group participants by nationality, previous educational experience, cultural cluster, age, sex and programme of study

Focus group participant	Nationality	Previous educational experience	Cultural cluster	Age	Sex	Discipline
Focus group 1						
Participant 1|1	British	International school in Germany, vet degree in Slovakia	European	29	F	Pharmacology
Participant 1|2	Bangladeshi	School in Bangladesh, medical degree in Bangladesh	Asian	26	F	Diabetes Care
Focus group 2						
Participant 2|1	Nigerian	School in Nigeria, first degree in Nigeria	Central Africa	26	F	Clinical Microbiology
Participant 2|2	Indonesian	School in Indonesia, first degree in Indonesia	Asian	23	F	Food Bioscience
Participant 2|3	Danish	School in Denmark, first degree in Norway	European	30	F	Clinical Ophthalmology
Focus group 3						
Participant 3|1	Omani	School in Oman, first degree in Oman, studied in English	MENA	29	M	Clinical Ophthalmology
Participant 3|2	Chinese	School in China, studied Chinese medicine in China	Asia	22	F	Pharmacology
Participant 3|3	Nigerian	School in Nigeria, began first degree in Nigeria, completed in UK	Central Africa	26	F	Pharmacology
Participant 3|4	Nigerian	School and Biology degree in Nigeria	Central Africa	27	M	Bimolecular and Biomedical Science
Participant 3|5	Chinese	School and first degree in China, been away from formal education for a while	Asian	41	F	Pharmacology

Appendix VI: Questionnaire

Welcome to the Conceptions of Learning Survey

Please read each question carefully and answer as accurately as you can. If you change your mind about an answer to a question then just click on the answer you want. Remember, in this questionnaire, there are no right or wrong answers. Your answers should be the ones that are right for you. You may ask for help from the researcher if you do not understand something or are not sure how to answer a question.

Your answers will be combined with others to make totals and averages in which no individual can be identified after all the data has been collated. We need to ask you for your student matriculation number so we can match it to your academic performance at the end of the trimester. This will not have any impact on your progress within the course. All your answers will be kept confidential.

Section 1

This section asks you about your personal details and previous educational experience.

***Please enter your Student identification number (matriculation number)**

***What is your programme of study?**

- ◯ MSc Biomolecular and Biomedical Sciences
- ◯ MSc Clinical Microbiology
- ◯ MSc Clinical Nutrition and Health
- ◯ MSc Diabetes Care and Management
- ◯ MSc Food Bioscience
- ◯ MSc Life Sciences
- ◯ MSc Pharmacology
- ◯ MSc Clinical Ophthalmology and Vision Research
- ◯ MSc Energy & Environmental Management
- ◯ MSc Sustainable Energy Technology
- ◯ MSc Waste Management
- ◯ MSc Maintenance Management
- ◯ MSc Applied Instrumentation and Control
- ◯ Other

Other (please specify)

***When did you start your programme of study?**

- ◯ September 2014
- ◯ January 2014
- ◯ Other

Other (please specify)

***What is your nationality?**

- ◯ British
- ◯ Indian
- ◯ Pakistani
- ◯ Sri Lankan
- ◯ Nigerian
- ◯ Saudi Arabian
- ◯ Burmese
- ◯ Chinese
- ◯ Kenyan
- ◯ Omani
- ◯ Other

Other (please specify)

***What is your age? (Please answer using numerals e.g. 17, 25, 33 etc)**

***What is your sex?**

- ◯ Female
- ◯ Male

***In what country did you attend secondary school? Please tick the correct box. If you moved country between the ages 11 – 18, you may click more than one box**

- ☐ United Kingdom
- ☐ India
- ☐ Pakistan
- ☐ Sri Lanka
- ☐ Nigeria
- ☐ Saudi Arabia
- ☐ Myanmar/Burma
- ☐ China
- ☐ Kenya
- ☐ Oman
- ☐ Other

Other (please specify)

***Did you follow an international programme of study?**

- ◯ Yes
- ◯ No

***Was English the predominant language in the classroom?**

- ◯ Yes
- ◯ No

***In what country did you undertake your first degree?**

- ◯ United Kingdom
- ◯ India
- ◯ Pakistan
- ◯ Sri Lanka
- ◯ Nigeria
- ◯ Saudi Arabia
- ◯ Myanmar/Burma
- ◯ China
- ◯ Kenya
- ◯ Oman
- ◯ USA
- ◯ Other

Other (please specify)

***Did you study your first degree in English?**

- ◯ Yes
- ◯ No

***What is the title of your first degree?**

***How is your current programme funded? Please click more than one box if appropriate**

- [ ] Self-funded (parents/family etc.)
- [ ] Funded by your national government (international students only)
- [ ] UK government funded
- [ ] Non-government fund (e.g. charity)
- [ ] Other

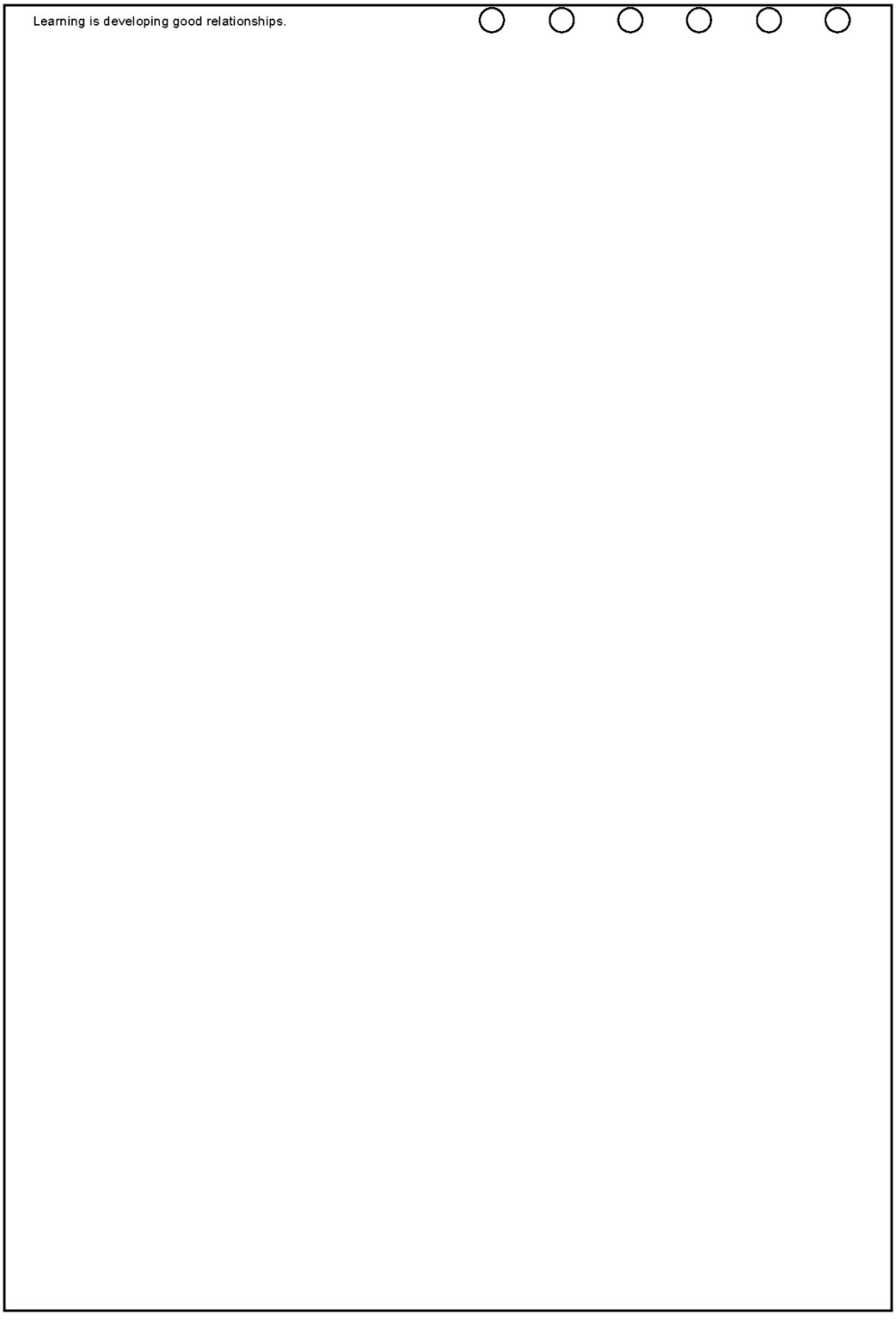
Other (please specify)

Section 2

This section asks you about your understanding of learning. For each of the following statements about learning concepts please click the box which best reflects how much this corresponds to your own experiences and understanding of learning.

***Choose one option from each row**

	Completely Agree	Mostly agree	Slightly agree	Slightly disagree	Mostly disagree	Completely disagree
Learning is when I'm taught something that I didn't know about before.	◯	◯	◯	◯	◯	◯
Learning is taking in as many facts as possible.	◯	◯	◯	◯	◯	◯
When someone gives me new information, I feel that I am learning.	◯	◯	◯	◯	◯	◯
Learning helps me to become clever.	◯	◯	◯	◯	◯	◯
Learning means I can talk about something in different ways.	◯	◯	◯	◯	◯	◯
When something stays in my head, I know I have really learned it.	◯	◯	◯	◯	◯	◯
If I have learned something it means that I can remember that information whenever I want to.	◯	◯	◯	◯	◯	◯
I should be able to remember what I have learned at a later date.	◯	◯	◯	◯	◯	◯
I have really learned something when I can remember it later.	◯	◯	◯	◯	◯	◯
When I have learned something, I know how to use it in other situations.	◯	◯	◯	◯	◯	◯
If I know something well I can use the information if the need arises.	◯	◯	◯	◯	◯	◯
Learning is making sense out of new information and ways of doing things.	◯	◯	◯	◯	◯	◯
I know I have learned something when I can explain it to someone else.	◯	◯	◯	◯	◯	◯
Learning is finding out what things really mean.	◯	◯	◯	◯	◯	◯
Learning is difficult but important.	◯	◯	◯	◯	◯	◯
Even when a learning task is difficult, I must concentrate and keep trying.	◯	◯	◯	◯	◯	◯
Learning and studying must be done whether I like it or not.	◯	◯	◯	◯	◯	◯
Learning has helped me to widen my views about life.	◯	◯	◯	◯	◯	◯
Learning changes my way of thinking.	◯	◯	◯	◯	◯	◯
By learning, I look at life in new ways.	◯	◯	◯	◯	◯	◯
Learning means I have found new ways to look at things.	◯	◯	◯	◯	◯	◯
Increased knowledge helps me become a better person.	◯	◯	◯	◯	◯	◯
I use learning to develop myself as a person.	◯	◯	◯	◯	◯	◯
When I learn, I think I change as a person.	◯	◯	◯	◯	◯	◯
Learning is necessary to help me improve as a person.	◯	◯	◯	◯	◯	◯
I don't think that I will ever stop learning.	◯	◯	◯	◯	◯	◯
I learn a lot from talking to other people.	◯	◯	◯	◯	◯	◯
Learning is gaining knowledge through daily experiences.	◯	◯	◯	◯	◯	◯
Learning is knowing how to get on with different kinds of people.	◯	◯	◯	◯	◯	◯
Learning is not only studying at school/college/university but knowing how to be considerate to others.	◯	◯	◯	◯	◯	◯
Learning is the development of common sense in order to become a member of society.	◯	◯	◯	◯	◯	◯


Learning is developing good relationships.

Section 3

This section asks you your studying habits. When you are studying, how often do you do the following? For each of the following statements about learning concepts please click the box which best reflects your overall study habit.

Choose one option from each row

	Never	Rarely	Occasionally	Sometimes	Often	Always
When I study, I try to memorise everything that is covered in the text.	◯	◯	◯	◯	◯	◯
When I study, I start by working out what exactly I need to learn.	◯	◯	◯	◯	◯	◯
When I study, I try to memorise as many details as possible.	◯	◯	◯	◯	◯	◯
When I study, I try to relate new information to knowledge I have from other subjects.	◯	◯	◯	◯	◯	◯
When I study, I read the text so many times that I learn it by heart.	◯	◯	◯	◯	◯	◯
When I study, I check if I understand what I have read.	◯	◯	◯	◯	◯	◯
When I study, I read the text over and over again.	◯	◯	◯	◯	◯	◯
When I study, I think about how the information might be useful outside university.	◯	◯	◯	◯	◯	◯
When I study, I try to decide which ideas I still haven't really understood.	◯	◯	◯	◯	◯	◯
When I study, I try to understand the material better by relating it to my own experiences.	◯	◯	◯	◯	◯	◯
When I study, I make sure that I remember the most important points in the text.	◯	◯	◯	◯	◯	◯
When I study, I think about how the information fits in with what happens in real life.	◯	◯	◯	◯	◯	◯
When I study and I don't understand something, I look for additional information to explain it.	◯	◯	◯	◯	◯	◯

Section 4

This section asks you about your preferences for different types of teaching. For each of the following statements about learning concepts please click the box which best reflects your overall preference.

Choose one option from each row

	Completely Agree	Mostly agree	Slightly agree	Slightly disagree	Mostly disagree	Completely disagree
I prefer lecturers who tell us exactly what to put down in our notes.	◯	◯	◯	◯	◯	◯
I prefer lecturers who encourage us to think for ourselves and show us how they themselves think	◯	◯	◯	◯	◯	◯
I prefer exams which allow me to show that I've thought about the course material for myself.	◯	◯	◯	◯	◯	◯
I prefer exams or tests which need only the material provided in our lecture notes and lab classes.	◯	◯	◯	◯	◯	◯
I prefer courses in which it's made very clear just which books/papers we have to read.	◯	◯	◯	◯	◯	◯
I prefer courses where we're encouraged to read around the subject a lot for ourselves.	◯	◯	◯	◯	◯	◯
I prefer books/ academic papers which challenge you and provide explanations which go beyond the lectures.	◯	◯	◯	◯	◯	◯

Section 5

This question asks you to predict your academic performance for this trimester/term.

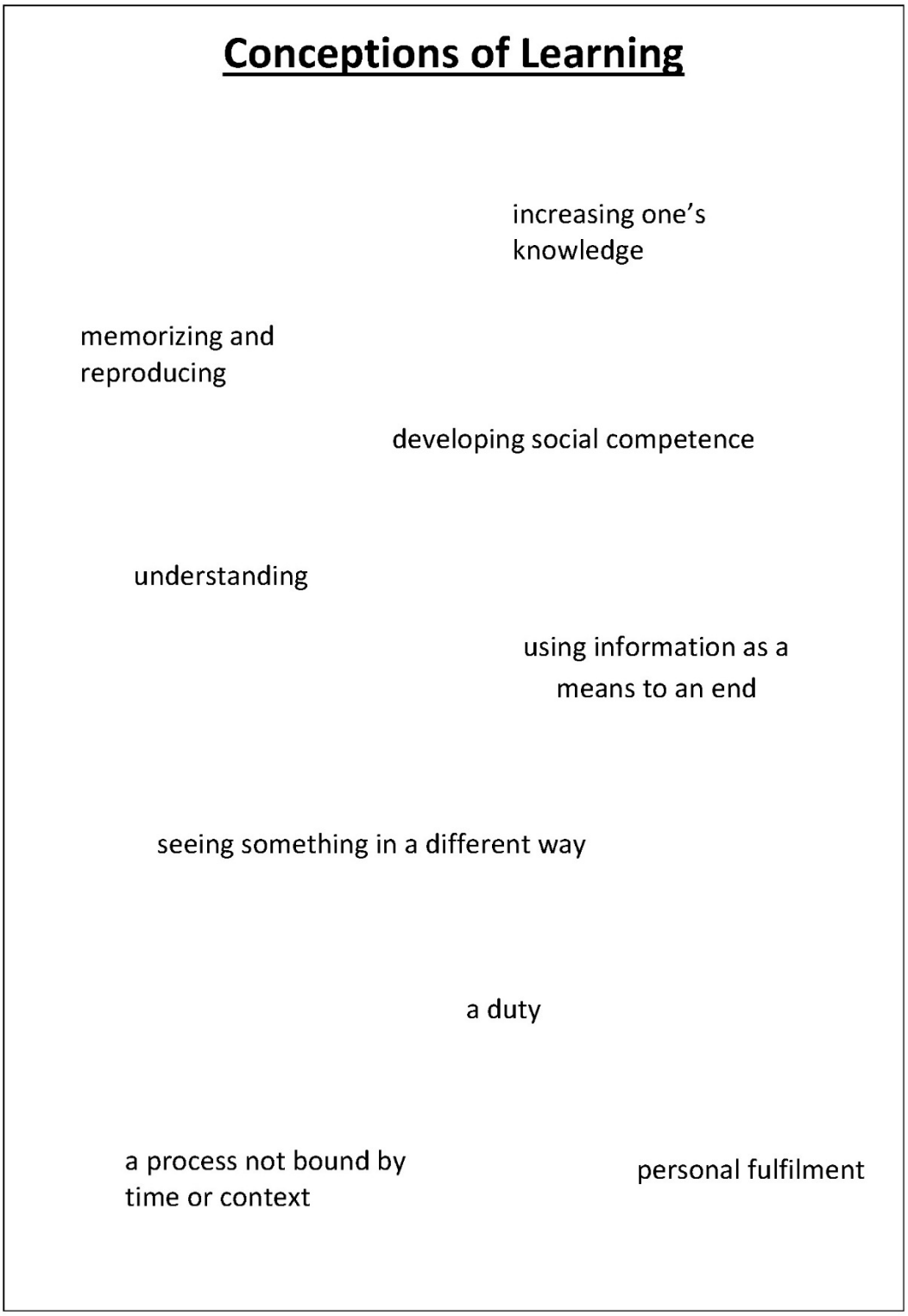
***With reference to the marking criteria below please indicate in numberals (e.g. 43) what you predict your average mark from all your subjects will be at the end of this trimester/term.**
Below 40% very poor fail
40% - 49% overall fail
50% - 59% pass
60% - 70% good pass
Over 70% excellent

***Finally, would you be willing to participate in a focus group (a one hour group discussion with the researcher and four other students) early in November to further explore conceptions of learning?**

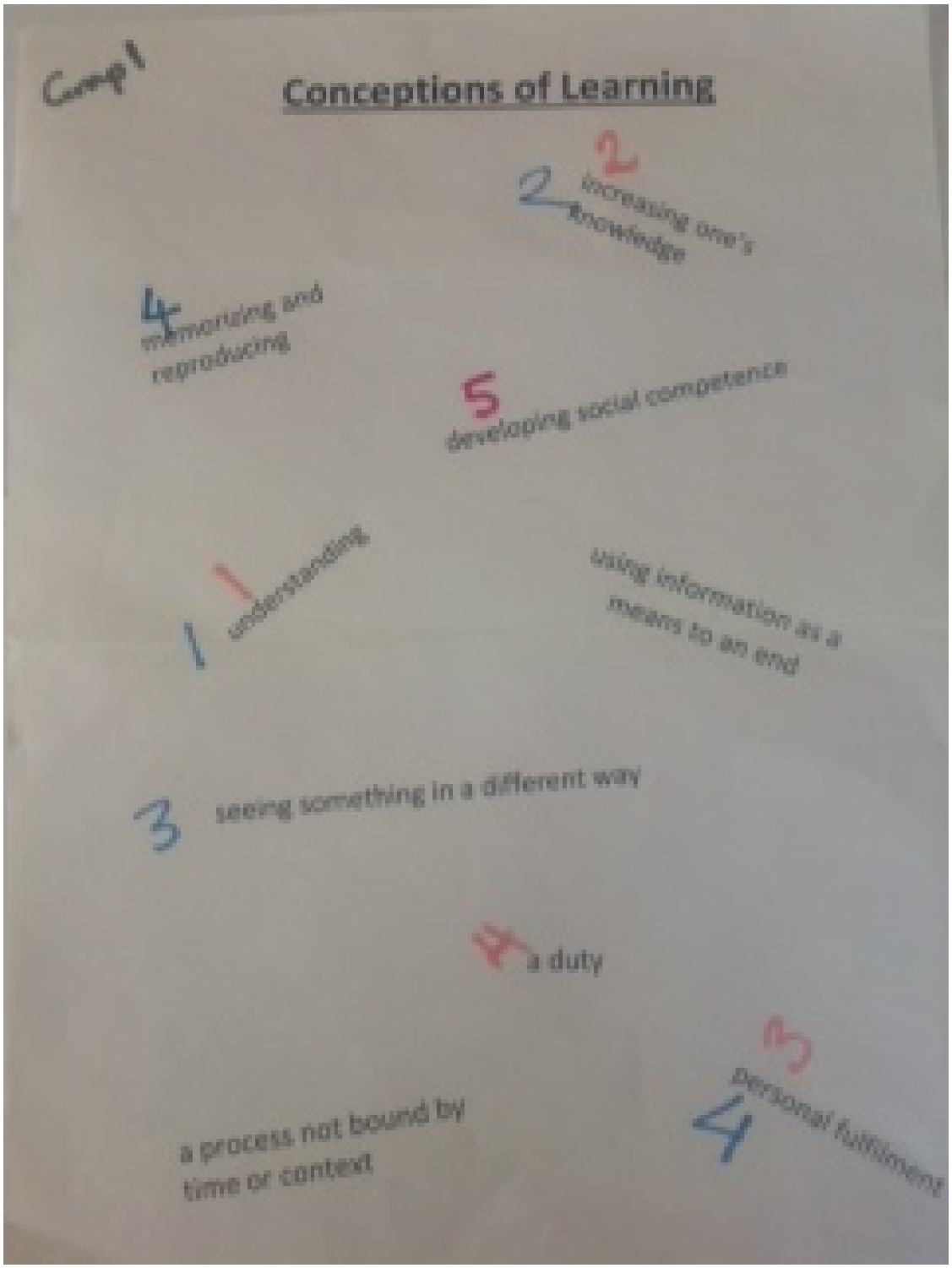
- ◯ Yes
- ◯ No

Appendix VII: Focus group activity

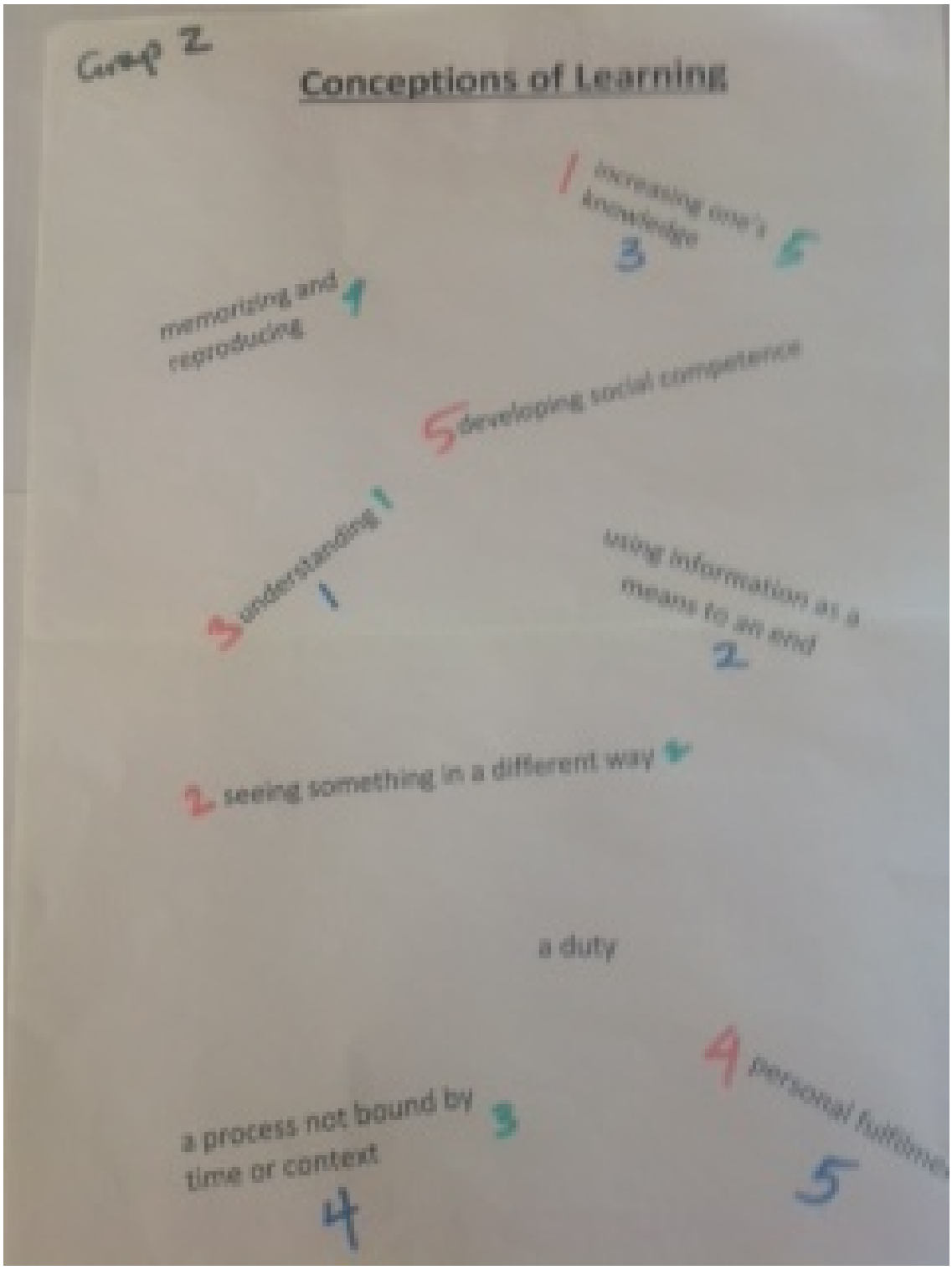
a. Blank document of learning conceptions for focus group activity



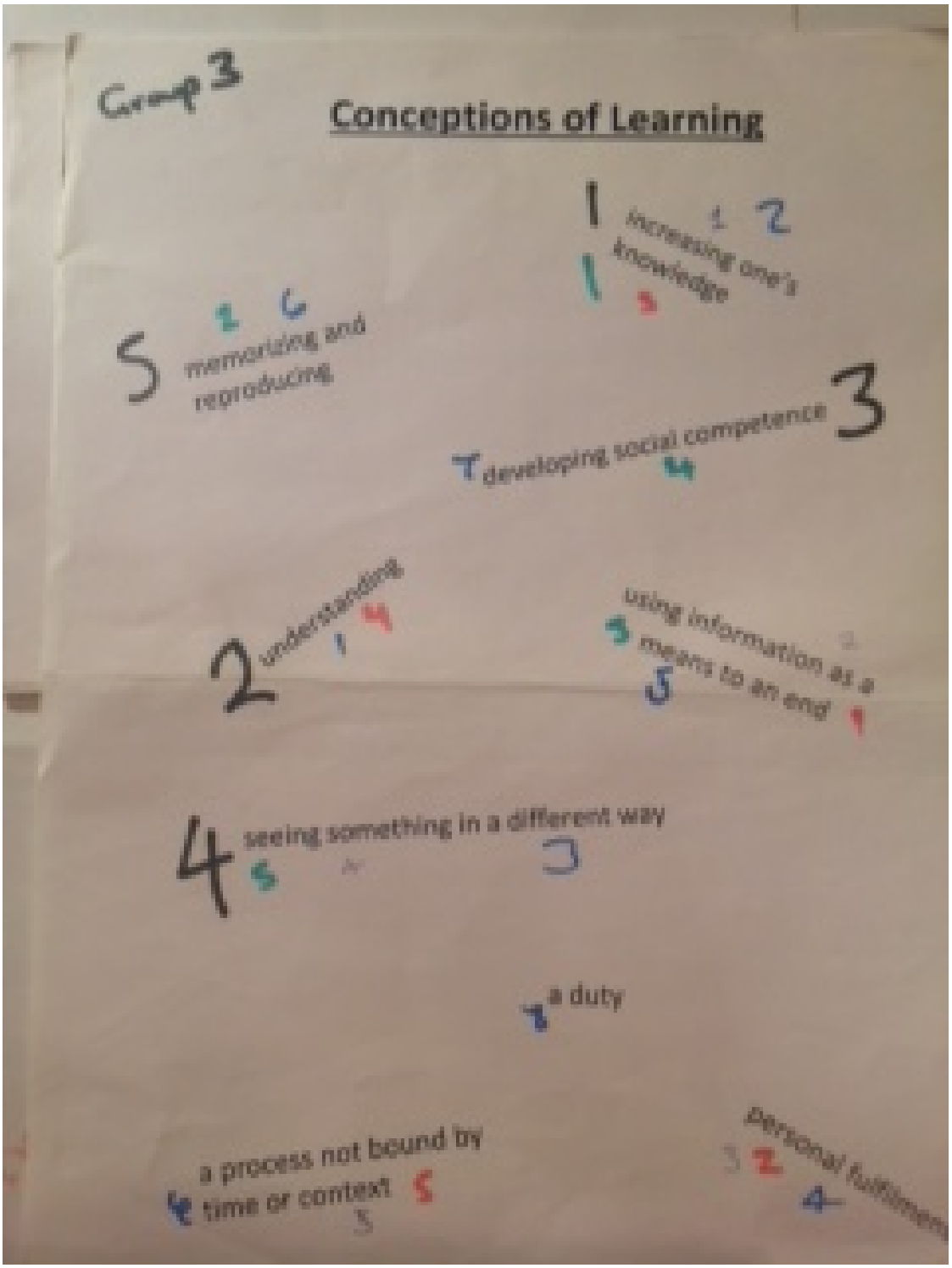
b. Focus group 1



c) Focus group 2



d) Focus group 3



Appendix VIII: Focus group prompts

Focus Group Prompts

Ensure everyone has tea, coffee, sandwiches etc.

Names *(get them to write their names on paper provided and pronounce them)*

"Can you tell the group about your experience of learning, where did you go to school and where did you do your first degree?" [approx. 15 minutes]

"I want to continue the discussion by exploring your understanding of the term learning; perhaps it would help if we referred to the list on the table." [approx. 20 minutes]

Introduce focus group activity. "Rate the five most important meaningful conceptions to you. There are no right or wrong answers."

"Does this cover all aspects of learning? What could you add?"

Explore any differences of opinions between the participants...

"Are differences due to previous experiences and influences of learning?"

- Culture
- Family
- School
- First degree

"Now can we move on to look at how you learn?" [20 mins]…….

"Assessment – to what extent does the type of assessment influence your learning conceptions? Is your approach different now you are on a master programme than undergraduate or school?"

"Finally, is there anything more about your experience or understanding of learning that you would like to tell me about?"

"Thank you very much for your time."

Appendix IX: Ethics Application

****PLEASE COPY THIS FORM ONTO YOUR OWN COMPUTER PRIOR TO COMPLETION****

RESEARCH PROJECT
REQUEST FOR ETHICAL APPROVAL FORM
For all SoE Staff and Student projects

UNIVERSITY OF STIRLING
SCHOOL OF EDUCATION

Principal Investigator/Student	Karen Thomson
Full Title of Project	Student Conceptions of Learning in Culturally Diverse Science Education Programmes
Funding Agency/Course	EdD Programme – cohort 8
Proposed Start Date	September 2014
Proposed End Date	June 2015

Is Ethical Approval required?

Yes (my research involves human participants) [x] Please fully complete the form

No (there are no human participants in my study) [ ] Students – your supervisor should complete the 'For student applications only' section at the foot of the page.

Date by which ethical approval is required	27th September 2014

Is this a full or staged application? **Full** [x] **Staged** (are further applications for this project anticipated at this stage?) [ ]

Is Chair's interim ethical approval sought? (see p. 2) **Yes** [X] **No** [ ]

Is ethical approval required from another governing body/agency? **Yes** [ ] (please provide details and attach any supporting documentation) **No** [x]

DECLARATION:

This proposal has been submitted for approval by the School of Education Research Ethics Committee.
I confirm that the Research will be undertaken in accordance with (please select one):

(a) British Educational Research Association's Revised Ethical Guidelines for Educational Research (2011) [x]

(b) Scottish Educational Research Association's Ethical Guidelines (2005) [ ]

(c) Other [ ] (please detail) [ ]

Signed [signature] **Date** 20/08/2014

FOR STUDENT APPLICATIONS ONLY:

Supervisor's decision: **N/A** [ ] **Approve** [X] **Refer to the SoE Research Ethics Committee for consideration** [ ]

Supervisor's signature:	Richard Edwards

PREAMBLE

The following questionnaire is designed to enable the School of Education's Research Ethics Committee (**SoEREC**) identify potential ethical issues in your research project. Completion of this procedure is necessary for all research involving human participants (whether funded or not) carried out within the Institute of Education.

It is our hope that engaging with this process will be of value to your project, in thinking through its ethical implications. If ethical issues arise during the course of your project, you are advised to consult the SoEREC in regard to ethical dilemmas etc. at any point.

WHERE DO I SEND MY COMPLETED FORM?

STAFF: Please send this in electronic format and a hard copy of this form with a copy of your research proposal to the Research Secretary (Laura Adam) who will submit it to the next available SoEREC meeting. If ethical approval is needed before this, Chair's interim ethical approval can be given. Please indicate if this is required on the front cover.

STUDENTS: Please give the completed form to your project supervisor. If they are satisfied that you have appropriately dealt with any ethical implications, they can approve your application. Supervisors should sign the form and send it to Laura Adam. If there are any ethical issues which supervisors feel need further consideration, then they should refer the application to the Research Ethics Committee. This should be indicated on page one of the application form. The signed form along with an electronic copy should be sent to Laura.

If you request Chair's interim approval your proposal will be considered by two members of SoEREC and will then be reviewed at the next meeting of the full committee.

QUESTIONNAIRE

A) Non-technical summary (maximum 100 words)
Please note that it is necessary to add a non-technical summary here, covering the points listed above

The SoEREC membership is diverse and includes representatives from other departments and organisations from the wider community. It is therefore helpful to provide a non-technical overview. Things you might consider here:

- who will be involved?
- what will they be asked to do?
- what will happen to the data gathered?
- how will the implications of the findings impact on the participants or others?

This project will require approx. 200 students undertaking Science Masters programmes at a Scottish University to complete a standard questionnaire (Purdie & Hattie, 2002) exploring their conceptions of learning. They will be asked to provide some demographic data including nationality and country in which they undertook previous education. They will also be asked to provide their student ID so academic performance can be matched to questionnaires. Following questionnaire completion 15 students will be selected for three separate focus groups to further explore their conceptions of learning. All data will be securely stored. Data will be collected during an educational session on learning styles.

B) Summary of design, methods and analysis
Please note that it is necessary to add summary of t he design, methods and

Conceptions of learning literature derives from a phemonenographical approach. This project will implement a mixed methods design, using a standard Conceptions of Learning Inventory (COLI, Purdie & Hattie, 2002). Initial discussions with my second supervisor, a quantitative analyses expert, suggested that 200 participants would be required to ensure validity. This sample is currently being sought through my own institution (GCU). Students will be asked to complete questionnaires electronically (using university iPads) during a session the researcher will conduct on approaches to learning. It will be fully explained that the questionnaire is for research purposes and there is no correct response to any of the questions, other than demographic details in section 1. Questionnaire data will be analysed using Factor Analysis. Fifteen students who volunteer will be picked and

analysis in this box.

allocated into one of three focus groups which will further identify themes regarding students' understanding of learning in a UK HEI. On completion of the first trimester students' academic performance will be matched to their COLI.

1. Informing Participants

1.1 What will participants be told about the study?

Participants will be told that the study explores conceptions of learning and how these relate to academic performance. It will be explained to students that data will be anonymised to ensure no-one other than the researcher can link data to specific student.

1.2 How will participants be informed of the nature and purpose of the research?

An information sheet will be provided explaining details of the study and contact details of the researcher. Information will also be explained in detail verbally to ensure students for whom English is not their first language fully understand the nature of the study.

1.3 How will participants consent to being involved?

A consent sheet will be signed prior to participation

1.4 Will children or vulnerable adults be involved in the research? **Yes** [ ] Please continue below **No** [x] Go to question 1.5

What steps will you take to ensure that they understand the nature and purpose of the research process?

1.5 How will participants be informed of their formal right to complain to the Head of SoE if they have any concerns about the research process?

This information will be provided on the information sheet

1.6 Will data be stored in a national archive and/or used for other purposes in the future? Yes [ ] Please continue below No [x] Go to question 2

Please give details:

1.7 How will participants be advised of this?

2. Offers of Confidentiality

2.1 What offers of confidentiality are you making?

Individual questionnaires and focus group recordings will only be accessible by the researcher, and potentially supervisors. This information will not be shared with anyone; no academic who is involved with their course will have access to any data.

2.2 How will you put these into practice?

Questionnaire data will be collected electronically and therefore be imported directly to SPSS preventing the need for lengthy data input involving a research assistant. The researcher will ensure that data is stored electronically on an encrypted computer. Focus groups will be recorded and only listened to by the researcher. Students will be identified by the researcher through student ID but no one other than the researcher will have access to the data.

2.3 How will participants

This will be included on the information sheet and explained verbally prior to students

be informed of confidentiality?	giving their consent to participate.

2.4 Will information about the participants be obtained from sources other than the participants themselves? Yes [x] Please continue below No [ ] Go to section 3

Please give details:	A grade point average of academic performance after their first trimester of study will be obtained from the university integrated student information system (ISIS)
Please give details of how you will maintain confidentiality of this source of information:	Permission to access academic performance via ISIS will be requested from students prior to students signing the consent form. This information is available to any university employee who has been trained in ISIS. The researcher has been trained to use ISIS. This will be matched to questionnaires using student ID. Only the researcher will have access to the questionnaires.

3. Right to Withdraw

3.1 How will participants be informed of their right to withdraw?	This will be explained verbally during the data collection session which will also discuss approaches to learning with the students. It will also be on the information sheet.
3.2 Will they be reminded of this?	Verbally and on the information sheet

3.3 Will there be significant power differences between researcher and researched? (e.g. with young children) Yes [ ] Please continue below No [x] Go to section 4

What is the nature of these power differences?	
What steps will you take to address these? **(eg with young children how will interactions be arranged to make withdrawal possible?)**	

4. Data Storage

4.1 Will all data to be held on computer be stored in compliance with the Data Protection Act? Information on this can be found at: http://www.rec-man.stir.ac.uk/data-protection/index.php Yes [x] No [ ]

Please give details:	The researcher's computer, which will store data, is encrypted. Data files will be backed up on the confidential folder of the staff network drive, which is password protected.
4.2 How will hard copy data be stored?	Recordings from focus group will stored in a locked cupboard
4.3 What steps will be taken to ensure the safe disposal and storage of data (both hard copy and electronic) at the end of the project?	Data will be disposed of in line with Glasgow Caledonian University procedure for sensitive data

5. Outputs

5.1 Will participants be able to identify themselves? (e.g. in any reports or dissemination material, by name directly, or by any other means that will permit you to match data to specific participants?)

Yes [ ] Please continue below **No** [x] Go to question 5.2

Please give details:

5.2 How will any assurances of confidentiality/ anonymity/ non-traceability be adhered to...

i) with regard to data analysis? Once the academic performance is matched with the questionnaire, student ID will be deleted.

ii) with regard to subsequent dissemination? Due to number of participants no one could possibly be identified in the final outcome of project

5.3 Do you intend to use research data for teaching purposes? **Yes** [ ] Please continue below **No** [x] Go to section 6

Please give details:

6. Use of Photographs, Video or Audio Recordings

6.1 Does the research involve the use of ...

...photographs?	[ ]	[ ]	
...video?	[ ]	[ ]	
...audio recordings?	[x]	**No to all** [ ]	Go to section 7

i) What permissions will you seek? A consent form will be signed by participants taking part in focus groups after the study has been explained in detail and the information sheet has been read

ii) How will this data be used? Focus groups will not be transcribed verbatim; themes among participating students will be identified by the researcher. This will further enhance the quantitative analyses.

iii) How will this data be stored? In a locked filing cupboard

7. Other Issues

7.1 Are there issues in the proposed research which could be anticipated to be contentious or ethically problematic?

Yes [ ] Please continue below **No** [x] Go to question 7.2

Please provide details and a justification:

7.2 Will any inducement be used to obtain **Yes** [x] Please continue **No** [ ] Go to

the subject's participation?		below		question 7.3

Please provide details:	Tea/coffee and cakes will be provided for those who participate in the focus groups

7.3	**Will your research involve deception?**	**Yes**		Please continue below	**No**	x	Go to question 7.4

Please provide details and a justification:	

7.4	**Does the study involve a risk of either physical or emotional stress to participants, or is there any reason to think that some participants might anticipate such stress?**	**Yes**		Please continue below	**No**	x	Go to section 8

Please provide details and a justification:	

8. Research Staff

8.1	**Are there any expectations that research staff will be subject to risky or stressful situations?** (e.g. research in a participant's home, or exposure to a potentially distressing situation?	**Yes**		Please continue below	**No**		Go to section 9

What measures will be in place to support such staff?	

9. Completion Instructions

PLEASE ENSURE

☑ **You give sufficient time (minimum 14 days in order that members of the Committee can consider your form.**
☑ **You have included a brief non-technical (no jargon) summary in part A.**
☑ **You have included a non-technical (no jargon) summary of design, methods and analysis in Part B.**
☑ **You have included your research proposal if appropriate.**

Thank you for completing this form.

Please send this in electronic format to:

laura.adam@stir.ac.uk

And ***a hard copy of this form together with a copy of your research proposal*** to:

Research Secretary (Laura Adam)
School of Education
Pathfoot Building
University of Stirling
FK9 4LA.

Appendix X: Oral explanation of purpose of research provided to students prior to consenting to participate

Information Sheet for *Student Conceptions of Learning* Research Project
You are being invited to take part in a research study. Before you decide, it is important for you to understand what the research is about, why the research is being done and what it will involve for you. Please take time to consider the following information carefully and discuss it with others if you wish. Feel free to tell the lead investigator 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.

What is the purpose of the study?
This study explores post-graduate health & science students' conceptions of learning. As our classrooms have students from a wide range of backgrounds, it is important that institutional policies and teaching practices are informed by our students. Better understanding students' conceptions of learning and how this relates to academic success will help the academic staff to better support your and other students' learning. Your participation will help those working in universities to better understand how to support students' learning now and in the future.

Why have I been chosen?
You have been asked to take part because you are a registered student on a taught post-graduate science programme in a Scottish university.

Do I have to take part?
No. It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and be asked to provide written consent. If you decide to take part, you are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect you or your studies in any way.

What will happen to me if I take part?
If you consent to taking part, you will be asked to complete an online questionnaire. It should take about 10 - 15 minutes to complete. There are no correct answers; the answers you provide should be the ones that are right for you. You may ask for help if you do not understand something or are not sure how to answer a question.
When the questionnaire is completed you click the submit button, your responses will be added to the data from other students.

Will the information I provide be kept confidential?
Yes. You are asked to provide your unique student identification (matriculation) number on the questionnaire so the researcher can input your academic performance. This will be the average mark from all the modules you are undertaking this trimester. Once this information is added to the data collected, your unique student identification (matriculation) number will be deleted and it will be impossible to identify you. You will not need to provide your name at the focus group. None of your lecturers or any university staff associated with your programme of study will have access to your responses. All information will be securely stored so that only the researcher can access it.

What will happen to the results?
The results will initially be written up as part of a Doctoral thesis, following which papers will be published for academic journals and presented at relevant conferences. It is necessary for the researcher to retain original data for six years, in accordance with Stirling University Policy. After that, all data collected will be destroyed.

Who is the researcher?
The researcher is Karen Thomson, a senior lecturer in Psychology at Glasgow Caledonian University. This research is being undertaken as part of a part-time Doctorate in Education (EdD) at Stirling University under the supervision of Professor Richard Edwards and Dr Marina Shapira.

What do I do if I am concerned about the research process?
If you are not happy with the process and procedure of this research project you should first approach the researcher. If you are unhappy with the response, you can submit a complaint in writing to the Head of the School of Education, Professor Michael Grenfell at the University of Stirling.

If you wish for further information or would you like to know the results of the study (after June 2015) please contact: k.thomson@gcu.ac.uk

Appendix XI: A plot of the eigenvalues