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Engaging the Networked Learner: Theoretical and Practical Issues

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A thesis submitted in partial fulfilment of the
requirements of the University of Wolverhampton
for the degree of Doctor of Philosophy

April 2010

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Abstract

The nature of learning and teaching in higher education has changed significantly in recent years. The emergence of social media and technologies has had a profound impact upon learner engagement and tutors have had to adapt their learning and teaching strategies accordingly. The thesis discusses the author's published body of research and presents a pedagogical framework for engaging the networked learner. The framework is based upon three perspectives that have emerged from the author's research. Firstly, different learning paradigms should be acknowledged when developing pedagogical approaches to using learning technologies. Secondly, the thesis discusses how the author's research on learning technologies, including VLEs and iPod technologies, should embrace networked communities and learner empowerment. Thirdly, the research on learning approaches is discussed which acknowledges different learning behaviours and the adoption of differentiated methods in learning and teaching. Whilst discussing the evolving nature of the learning environment, the pedagogical framework draws together each of the aforementioned perspectives. The framework raises a number of factors for engaging the networked learner. A set of practical guidelines based around institutional, tutor and learner perspectives are discussed and underpin the application of the framework. The thesis concludes with theoretical observations on learning and learning theory and presents limitations and areas for further research.

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Acknowledgments

I would firstly like to thank my academic advisor, Professor Andrew Lane, for the significant amount of support and advice he has given throughout the development of this thesis.

I would also like to thank colleagues at the University of Wolverhampton who have offered support and guidance on the completion of the thesis.

I am grateful to the Institute for Learning Enhancement at the University of Wolverhampton who have both funded and supported the development of the research projects from which many of the publications have emanated. I would also like to thank fellow co-authors of articles that I have written publications with.

I would like to thank my mum, Mrs Isobel Dale, for her continual support and for proof reading the revised submission.

Finally, I'd like to thank my children, Saffron and Imogen, for their support, time and understanding in the development of this thesis.

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Glossary of Terms

HE	Higher Education
HEI	Higher Education Institutions
LGC	Learner Generated Content
LTH	Leisure, Tourism and Hospitality
MCQ	Multiple Choice Question
NOP	Networks of Practice
eNOP	Electronic Networks of Practice
PLE	Personalised Learning Environment
RSS	Really Simple Syndication
VLE	Virtual Learning Environment
ZPD	Zone of Proximal Development

1.0 Chapter One – Introduction

The nature of the contemporary student has evolved significantly in recent years. Today's students have been referred to as digital natives who are technologically savvy, and process information differently from previous generations (Prensky, 2001). A society has emerged which reflects an "always-on" culture (Baird and Fisher, 2006) enabling a belief that interaction with information can occur, anytime, anyplace, and anywhere. This culture has largely been precipitated by the growth of new forms of social media and related technologies that enable engagement with networks of communities. As a phenomenon, social networking is arguably become a powerful means for interacting, communicating and learning (Barnes and Tynan, 2007). Indeed, its impact is proposed to have a pervasive effect across society, enabling people to engage as a shared community, whatever their age, gender or culture (Goodyear et al., 2003).

A generation of learners are entering higher education having been immersed in a range of electronic devices and gadgets, including personal computers, games consoles, personal music players, mobile phones and so on. These devices structure the daily lives of a generation who have been widely acknowledged as the "net generation" (Oblinger and Oblinger, 2005). The rapid emergence of learning technologies presents both opportunities and threats to a higher education system that has been predicated upon traditional lecture style approaches to learning and teaching (Bach et al., 2007). A traditional lecture is defined as a one-way process whereby the lecturer imparts information via speech and overheads, and students take notes. In this model, the lecturer is active and the student largely passive. Students can interact with

the content by asking questions. Recent wide scale research into the adoption and use of learning technologies has noted how students have higher expectations and increasingly desire interactive experiences (Noss, 2008; Ito et al., 2008). Though Burgess and Mayes (2003, p.301) have acknowledged that "pedagogy will evolve to fit with the capabilities of the new technologies", challenges remain in the embedding of these technologies as part of the learning experience.

Higher education (HE) has been going through a period of significant change and has required teachers, educators and policymakers to be receptive to factors that are driving this change (Laurillard, 2008). Such factors have included educational policies concerning widening participation and the move towards blended modes of delivery (Motteram, 2006, Hughes, 2007, Johnson, 2007). Furthermore, the rising expectation of students, which has been driven by the payment of tuition fees, has placed an economic value upon education (Nulden, 2001). As a result the emphasis in HE has been towards enhancing the student experience and this is evidenced through the proliferation of evaluation and satisfaction surveys at module, course and institutional level (Douglas et al., 2006). In order to deliver an enhanced student experience, Higher Education Institutions (HEIs) have thus been empowered to become more dynamic and flexible in their approach (Laurillard, 2008). This has engendered a culture in some aspects of HE that explores new models of learning and teaching that "meet the needs of a generation of learners who seek greater autonomy, connectivity, and socio-experiential learning" (Lee and McLoughlin, 2007).

Central to these models has been the role of learning technologies to support learning delivery (Motteram, 2006). Electronic modes of communication including virtual

learning environments and mobile and wireless devices have influenced learning engagement (Laurillard, 2006). These technologies have facilitated a process of "networked learning" (Steeples and Jones, 2002; Wise and Quealy, 2006) that involves the promotion of "connections" between learners, between learners and tutors and between the learning community and learning resources (Goodyear et al., 2006). However, according to Barnes and Tynan (2007) university teaching has fallen behind changes in the range of new technologies that have emerged. Furthermore, any attempt to introduce these technologies often fails to be based upon sound pedagogical frameworks (Bullard, 2003). Thus, the lack of conceptual frameworks for understanding engagement with learning technologies, has reduced the potential benefits that technologies can offer to the learner experience (Laurillard, 2002, Unwin, 2007).

Providing an agreed definition of learning is challenging and definitions have often been grounded in the different theoretical learning paradigms of behaviourism, cognitivism, constructivism and social constructivism (Siemens, 2005). Furthermore, McGregor (2007) notes how theorists widely acknowledge that the learner is the constructor of knowledge, but also recognises that there are disagreements on how and where it occurs, what factors influence learning, and the outcomes to suggest learning has occurred.

The thesis intends to draw together the collection of journal publications produced by the author. The research is problem based and uses different learning theories as a basis for understanding how different technologies could promote engagement in learning activities, which in turn positively influence student performance. Whilst

offering a critical review, the thesis will discuss how the body of research contributes to knowledge on these different learning theories. An aim in this thesis is to show the published studies when seen as a collective, make a meaningful contribution to not only knowledge on learning theory, but also practice. The intention of the discussion is not to advocate one learning theory over another, but rather to illustrate how certain learning theories apply better for some learning aspects than others.

In terms of specific theories, the thesis will investigate how the published research develops a further understanding of learning theory on behaviourism, cognitivism, constructivism, social constructivism, connectivism and navigationalism. In doing so, the thesis will challenge aspects of the theoretical assumptions underpinning each theory. The thesis further aims to link relevant theories to provide a pedagogical framework and recognising that within a culture of rapidly changing technology which can cause stress to lecturers, provide a set of practical guidelines for engaging the networked learner. The submission will begin by introducing the body of research under discussion. This will act as a series of signposts to guide the reader through the research that has been undertaken.

The thesis will acknowledge the authors research into different learning approaches. At the outset, the aim of conducting the journal articles presented in this thesis was driven by a need to enhance both the learning experiences of the student and a perception that lecturers should be engaging with modern technology. If lecturers are to change what they do, then they will require evidence to show that the new method is better than the old. As the number of studies published increased, it became clear that there was a need to provide a synthesis, and collate a set of practical guidelines.

Given that practice should be evidence-based and theory driven, the present research seeks to address such a need. It should be noted that only a selection of papers are cited in this thesis. In addition to the ten publications cited, I have been involved with ten other papers. The commentary draws upon seven academic papers and three practice papers. It is acknowledged that practice papers do not encounter the same level of scrutiny during the review process. Where practice papers are reviewed by one of the editorial board, academic papers are blind reviewed with reviewers blinded to the editor also. The practice papers enlighten, from a users perspective, the relationship between pedagogy and the application of the technology under investigation. Furthermore, issues and research findings that have emerged from these papers have informed the theoretical underpinning for the thesis.

Of papers cited, Dale and McCarthy (2006) have reviewed and synthesised different concepts associated with learning approaches and have contextualised this with students studying leisure, tourism and hospitality (LTH) related programmes. In offering a critique of the "generic" module approach to teaching, Dale and McCarthy (2006) have noted the different types of learning approaches that LTH students have, and the subsequent need to adopt different teaching styles to meet the needs of a diversity of learners. The research offers a basis for understanding the way in which students behave and engage within the context of the learning environment.

The thesis will progress onto exploring the author's research into the role of educational technologies in learning engagement. This includes the use of Virtual Learning Environments (VLEs), and more latterly, the role of technologies including iPods and podcasting. The research will provide an analysis of learner engagement

with VLEs, including different learning styles when using VLEs and student motivation towards the use of VLEs for effective learner engagement (Dale and Lane, 2007). The thesis will further discuss the research into the discursive functionality of VLEs as part of the learning process. This includes the use of discussion forums and multiple choice questioning techniques (MCQs) as a method for engaging learners (Dale and Lane, 2004; Lane, Dale and Horrell, 2006).

The research has explored the role of emerging social networking technologies including the use of podcasting and iPod technologies in differing contexts. Dale and Pymm (2009) have termed this as "Podagogy" which is defined as "the use of iPod technologies to develop pedagogical practices in learning and teaching" (Dale and Pymm, 2009). The research encompasses the iPod as a learning technology in its own right, in addition to the use of associated mediums such as podcasting that can enable the enhancement of student learning. The Podagogy research acknowledges the blurring between leisure and learning and how students engage with technology and electronic devices in their day-to-day life. The research attempts to draw out a number of common themes that can be associated with the iPod and will be explored further in the thesis.

Recent research by the author has specifically explored the role of the iPod in developing creativity amongst learners (Dale 2008). Dale (2008) has investigated a range of factors that promote creativity in the learning environment and researched, from a tutor perspective, how creativity can be developed using the iPod as a learning device. The author's research into the use of podcasting has explored the role this media has played in supporting student learning. Dale (2007) has proposed a range of

strategies for using podcasting, in addition to exploring the student experiences of podcasting as a delivery medium (Dale and Hassanien, 2008). The research forwards a fresh perspective on how learners engage with new media as part of both their social and learning experiences. The differences in learning approaches to the adoption of new technologies, will be acknowledged as it applies to students studying different subjects including sport (Dale and Lane, 2004; Lane, Dale and Horrell, 2006; Dale and Lane, 2007), tourism, leisure and hospitality, (Dale and McCarthy, 2006; Dale, 2007; Dale and Hassanien, 2008) and the performing arts (Dale, 2008; Cooper, Dale and Spencer, 2009; Dale and Pymm, 2009). In light of the aforementioned introduction to the research, the following aims and objectives are presented.

The aim of the thesis is to:

- Critically examine the theoretical and practical issues when engaging the networked learner

To achieve this aim the objectives of the research are to:

- Critically review learning theory as it relates to the author's published body of research
- Critically appraise the methodological approaches that have been used when undertaking the published works
- Propose a pedagogical framework for understanding learner engagement which emerges from the author's published body of research
- Develop a series of practical guidelines for engaging the networked learner
- Provide a set of conclusions and recommendations that collectively emerge from the author's body of research

The thesis will comprise the following chapters:

Chapter one has introduced the rationale to the thesis. This has included the key issues to be discussed and an outline of the publications to be reviewed.

Chapter two will draw upon learning theory to provide a critical discussion of the author's research into the different approaches towards exploring learning engagement. This will act as a theoretical platform for investigating the author's research into learning engagement with social media and related technologies. Behaviourism, cognitivism, constructivism and social constructivism will be reviewed and connected to the body of research. Emerging learning theories on connectivism and navigationalism will be acknowledged when discussing the published works.

Chapter three will discuss the methodological approaches that have been adopted when undertaking the body of research. This will include a critical appraisal of the author's philosophical position in addition to the methodological approaches that have been adopted in the studies. A reflexive account of the author's positionality to the research will be discussed. The trustworthiness, ethics and limitations of the research studies will also be addressed.

Chapter four will present the pedagogical framework that has emerged from the body of research. The methods in which learners engage and interact with different learning and teaching approaches via the use of technologies will also be discussed.

Chapter five will outline a series of practical guidelines that have emerged from the findings of the author's body of research. These will be structured around learner, tutor and institutional guidelines that underpin the pedagogical framework.

Finally, chapter six will provide a set of conclusions and recommendations that have evolved collectively from the publications and which reflect upon the overall aim and objectives of the thesis.

2.0 Chapter Two - Learning Paradigms

2.1 Introduction

The following chapter will critically review a number of key learning paradigms. These have been selected on their relevance to understanding the contribution to knowledge of the author's body of research. This discussion of the learning paradigms will include behaviourism, cognitivism, constructivism and social constructivism. More latterly, new learning paradigms have emerged, including connectivism and navigationalism. The review will acknowledge how learners learn and the different approaches that are taken to learning in Higher Education. This chapter introduces the different learning paradigms and key concepts with which the author's published studies are related to. With reference to studies published since, the discussion attempts to offer a series of critical reflections. The rationale for selecting these theories is the relationship that they have to the published works.

2.2 Behaviourism

Behaviourism is founded on the principles that individuals learn via punishment and reward (Peel, 2005). When applied to learning, behaviourist principles suggest the key driver to students learning, is what information is given and how it is reinforced (Barnes and Tynan, 2007). Behaviourism is traditionally grounded in research into reinforcement and classical and operant conditioning (Thorndike, 1911, Pavlov, 1927, Skinner, 1938). Through experimentation with animals, behavioural theorists found that changes in behaviour would result when exposed to external stimuli (Chamorro-

Premuzic, 2007). This stimuli, which can include methods of reinforcement or punishment, generates changes to a persons psyche and the way in which they behave when exposed to a given situation (Peel, 2005).

Behaviourist theorists suggest that learning occurs as an outcome of experience (Adams, 2006, Jordan et al., 2008). Positive reinforcement is proposed to increase the likelihood of acquiring skills and habits (Maclellan, 2005), provided the link between the intended behaviour and reinforcement schedule are strong enough. The traditional lecture-seminar situation is argued to take a behavioural approach to learning (Leung, 2003). The assumption is that the lecturer is the expert and what is said is knowledge students need to pass the course. Knowledge is disseminated to students and acts as didactic stimuli (Maidment, 2005). This is then reinforced through feedback in learning activities, which conditions students understanding (Barnes and Tynan, 2007). This approach is argued to reaffirm the power of the teacher over the student (Fox, 2001). As Maclellan (2005, p.136) observes "learning is the result of the reinforcement of behaviours within a context that is deliberately manipulated by the teacher".

Yuen and Hau (2006) recognise the epistemological assumptions of the teacher-centered approach to teaching. They argue that this is based upon empiricist ideology. That is, knowledge is obtained by observing entities, properties and relationships in the world. As this is assumed to be relatively unchanging knowledge, the objective of the teacher is therefore to disseminate this in the most efficient method possible (Yuen and Hau, 2006). In this context the learner becomes a passive recipient of knowledge (Papastergiou, 2007, Hanson and Sinclair, 2008, Gulati, 2008) and can

limit the potential for providing an authentic experience for learners (Azzarito and Ennis, 2003) through problem solving and strategy learning (Ruschoff and Ritter, 2001). Though, conversely Fox (2001, p.26) contends that "passive absorption" of experience can occur. In this respect, learning becomes an active process (Fox, 2001).

The author's research (Dale and McCarthy, 2006) (see Appendix A) has explored the role of using a traditional lecture-based approach to teaching across a range of modules. The modules used are taught collectively across related programmes and therefore involve teaching skills, which apply to a number of courses, such as research methods. The author explored this approach within the context of students studying leisure, tourism and hospitality programmes. Dale and McCarthy contend that generic modules are appropriate as part of a traditional approach to teaching students. The paper identifies, from a teacher's perspective, that generic modules enable the core concepts, theories and perspectives of the subject to be disseminated to all students. This results in the efficient dissemination of knowledge and information. The research noted that from a managerial and resource perspective it enables the efficient utilisation of human and physical resources. It should be noted that Dale and McCarthy are critical of the difficulty in engaging learners within their own subject context, when taking a generic approach to module delivery.

Drill and practice behaviourist methodologies are often argued to be found in computer based blended learning activities (Leakey and Ranchoux, 2006). Drawing upon the author's research, the application of the Skinnerian principles of operant conditioning were found to be effective, when exploring student performance on a module. This involved the use of a reinforcing stimulus to develop a change in

behaviour (Field, 2007). Lane, Dale and Horrell (2006) (see Appendix B) designed a series of Multiple Choice Question (MCQs) tests supported by a Virtual Learning Environment (VLE). The tests were designed to provide students with immediate feedback as a basis for the reinforcement of knowledge learnt. Moreover, consistent with behaviourist principles, the lecturers identified the information that needed reinforcing and how this reinforcement was delivered. Student input in the learning process was minimal. Lane et al acknowledged some aspect of this and addressed this issue by allowing students to select an MCQ at a level of their choice. Tests were designed to differentiate by level of understanding. This added a further dimension, which draws upon constructivist methods of learning, and the research will be discussed in greater detail further in the chapter.

Reinforcement in learning was a key observation of the behaviourist school of thought (Staddon, 2006). However, behaviourism fails to take account of instances where learning takes place without reinforcement through "latent learning, imitation and insight" (Kurzban, 2001, p.420). Indeed, Jackson (2008) argues that learning is tacit as opposed to reflective and conscious and behaviourism assumes that learning is sequential and mechanical rather than interrelated and dynamic, therefore limiting its potential to develop understanding and application to different contexts. A further limitation of behaviourism is that it does not adequately acknowledge the social context of the learner (Alonso et al., 2005, Field, 2007), how language can be a key aspect of learning (Chomsky, 1986) and how factors in the learning environment can promote or constrain action (Jordan et el., 2008). It has been suggested that these criticisms can neglect arguments that the recall of knowledge can be an important part of learning (Fox, 2001).

As behaviourism largely focuses upon changes in observable behaviour, it is limited in fully embracing the gamut of cognitive and mental activity (Adams, 2006, McGregor, 2007). It ignores the cognitive psychological processes of individuals and the different learning behaviours that they may bring to the learning environment (Peel, 2005). It assumes that knowledge can be transferred from person to person in an inert form (Maclellan, 2005) and "no attempt is made to determine the structure of a student's knowledge nor to assess which mental processes it is necessary for them to use" (Leung 2003, p.503). A key finding was that people have different learning styles and one approach will not suit (Dale and McCarthy, 2006). The study acknowledged that teaching students with disparate learning abilities might not be receptive to the traditional lecture format. The paper further contends that this is compounded where institutions adopt widening participation policies and support large numbers of students with a range of abilities. The differences in learning behaviour that the research discovered will be discussed in further detail in the subsequent section on cognitivism.

2.3 Cognitivism

Cognitivism contends that knowledge is attained from within the mind (Watkins, 2000). Cognitivism is a scientific approach to learning focusing on the study of mental processes including sensation, perception, attention, encoding and memory, and learning results from organising and processing information effectively (Alonso et al., 2005, Jordan et al., 2008). It is based upon what learners know and how they learn. The aim is therefore, to transfer knowledge using the most efficient and

effective approach (Martinez et al., 2007). This knowledge can then be used elsewhere to solve problems (Leung, 2003; Kelly, 2006).

Cognitive approaches therefore view learning as the process of information through actions and acknowledges differences in different learning styles (Barnes and Tynan, 2007). An aspect of cognitive learning is the deep and surface processing model as initially forwarded by Craik and Lockhart (1972) and further explored by Marton and Saljo (1997). Surface learning is "the use of routine memorisation to reproduce those aspects of the subject matter expected to be assessed", whereas deep learning is "active engagement with the content, leading to extensive elaboration of the learning material while seeking personal understanding" (Entwistle, 2001 cited from Dale and McCarthy, 2006, p.49). Surface learning draws upon low level cognitive skills, whereas deep learning requires higher order cognitive skills, including conceptual and critical thought (Rosie, 2000). Biggs (1979) and Ramsden (1979) also noted how students could also have a strategic or achieving approach to their studies and the desire to achieve the highest grades.

Dale and McCarthy are critical of modern HE practices arguing that the semesterisation and adoption of a learning outcome ethos, negates students engaging in a deep learning experience. Confirming recent research (Huang and Busby, 2007), Dale and McCarthy contend that didactic lecture based methods are limited in their potential for stimulating learners and can encourage a surface based approach to learning. Where a surface based approach is adopted, this merely produces students who have a limited understanding and knowledge of the subject matter. This is consistent with recent research by Kember et al. (2008) who found that some

disciplines lend themselves more towards a deep learning approach and this is further influenced by the teaching and learning environment. When analysing modes of assessment, Furnham et al. (2008) found that surface learners prefer multiple choice tests and group work, whereas deep learners prefer, essay, oral exams and the final dissertation; that is deep learners prefer methods which involve a greater degree of autonomy and problem-solving skills. Moreover, when engaging in self-assessment, surface learners are inclined to provide lower evaluations of their own performance (Cassidy, 2007), and undermine levels of self-confidence further. These perspectives were consistent with observations by Dale and McCarthy and the approach that LTH students take towards learning and assessment. Dale and McCarthy found that when generic modules are taught across courses, this can dilute the student's core subject discipline, resulting in a surface based approach to learning.

Dale and McCarthy (2006) found that students are not homogeneous in terms of skills and abilities, or interests, and that different learning behaviours are apparent. These experiences and beliefs influence their desired learning approach, and how they manage their studies. Dale and McCarthy (2006) found that with activist styles of learning, students often prefer a "hands on" approach. Dale and McCarthy reported that LTH learners who exhibit an activist mode of learning behaviour like to be actively engaged in their learning. They prefer learning and teaching strategies that provide opportunities to engage in practical and vocational experiences. The research found that activist learners are not receptive to a traditional lecture based mode of teaching and this affects their motivation to learn. Indeed, the traditional approach to delivery fails to engage those students who have activist styles of learning (Johnson, 2007) and recent research has shown that they are less likely to succeed in their first

year of study (Goldfinch and Hughes, 2007).

Recent research by Peters et al. (2008) supports claims made by Dale and McCarthy. When analysing the learning style preferences of sport students, they argue that student preferences were towards practical, kinesthetic and experiential styles of learning. They also note the difficulties students encounter with those aspects of the curriculum which are theoretical and taught in a conventional way (i.e. lecture format). This further confirms the thoughts of Dale and McCarthy in arguing that learning and teaching strategies should be aligned to meet the needs of the preferred learning styles of students (French et al., 2007, Goldfinch and Hughes, 2007, Peters et al., 2008).

Dale and McCarthy's research contributes to understanding the learning approaches of students from a qualitative perspective. This enables a closer understanding of the beliefs of students towards knowledge and understanding and how this is influenced by their learning style (Phan, 2008). Furthermore, the reliability and validity of traditional methods of assessing approaches to learning have come under continued scrutiny since the author's research (Franklin, 2006; Klien et al., 2007; Rayner, 2007; Slack and Norwich, 2007). These studies contend that inventories testing learning approaches can lead to over generalization (Slack and Norwich, 2007), labeling of individuals (Franklin, 2006) and are inappropriate for assessing students. This issue is exacerbated among students where English is not their first language (Klien et al., 2007).

As a learning theory, a limitation of cognitivism is that it does not adequately address the complexity of knowledge across teachers and students (Kelly, 2006) and wider networks of learning utilising technologies. As the objective is the transfer of knowledge in the most efficient and effective manner, this can have the potential to reduce the complexity of learning tasks and the mental processes that are needed to complete the task (Leung, 2003). Cotton and Gretsy (2007) are also critical of theories concerning surface and deep learning. Drawing upon the work of Haggis (2003), they argue that students can be resistant to changing their approach to learning and that surface learning can actually result in positive results. Furthermore, similar to behaviourism, cognitivism assumes that learners are relatively compliant in nature (Watkins, 2000) and ignores the influence of social processes and the interaction that a learner has with their tutors, peers and other actors in the learning process (Kelly, 2006; Jordan et al., 2008).

2.4 Constructivism

Constructivism focuses on what people do with information to learn (Wood and Bennett, 1998; Adams, 2006; Jordan et al., 2008). Learning is an active process through which learners "construct" new meaning rather than acquiring knowledge through a conditioned response as is the case for a behaviourist approach (Hung, 2001; Nulden, 2001; Ruschoff and Ritter, 2001; Gulati, 2008). In the context of constructivist methods, learners should take an active part in their learning experience in collaboration with others (Macellan, 2005; Palmer, 2005). The process is active in that students have to engage with their existing knowledge base, link these to the

current experience and make changes to these experiences if required (Alonso et al., 2005; Palmer, 2005; Yilmaz, 2008).

Neo (2003, p.463) therefore contends that "the learning process is shifted towards a student-centric mode and students become active learners and take more responsibility for their own learning, and in the process, learn to construct knowledge on their own". As a result of knowledge construction it is assumed that a deeper understanding of the subject matter occurs (Loyens et al., 2007; Hanson and Sinclair, 2008). Epistemologically, it is contended that constructivism is relativist in nature (Kivinen and Ristela, 2003; Terhart, 2003; Yuen and Hau, 2006). It questions the nature of universal truth and that meaning is a construction of social relations derived from human interaction (Terhart, 2003; Yuen and Hau, 2006). Each person, therefore, forms their own representation of knowledge (Dalgarno, 2001). A limitation being that this has the potential for democratising different meanings, resulting in a lack of direction and the confusion of thought (Watkins, 2000, Fox, 2001).

Papastergiou (2007) delineates between cognitive and social conceptions of constructivist learning theory. Cognitive constructivism asserts that knowledge is not focused upon the communication of information from one source to another but is a construction of knowledge by an individual in an attempt to make sense of the world (Papastergiou, 2007). This knowledge resides in the individual as a process of cognitive conflict or disequilibrium (Ray, 2002). Piaget (1969) explored how learners can construct meaning from an interaction with their environment. This is achieved through a process of adaptation, involving the accommodation of existing ways of thinking to the assimilation with new experiences (McGregor, 2007, Hunter, 2008).

Palmer (2005) acknowledges how learning through experiences can be physical through interaction with objects in the environment; mental by considering things that have been observed; and social through relations with adults and peers. Meaning is generated through these experiences (Spigner–Littles and Anderson, 1999). In this context, the tutor provides experiences that facilitate constructivist learning (Hunter, 2008).

The constructivist position is widely argued to be necessary when developing online learning strategies (Huang, 2002; Denis, 2003; Dron et al., 2004; Stacey et al., 2004; Hunter, 2008; Gulati, 2008). However, studies have found that online learning has only been partially successful in developing a constructive learning approach (Hughes and Daykin, 2002) and can still promote surface learning (Cotton and Gretsy, 2007). In the construction of learning, the author's research has explored the potential of empowering learners to engage with learning materials as part of a knowledge building process (Nulden, 2001). At a basic level, this can involve the student downloading lectures. It could also involve interacting with the functionality of VLEs, making use of, for example, discussion forums, multiple choice questions (MCQs) and so on. However, the author's research has noted the minimalist nature of the former level of engagement (Dale and Lane, 2004). It should be noted that the effectiveness of using the interactive functions in VLEs to empower learners, has been evident in the use of discussion forums (Dale and Lane, 2004) (see Appendix C) and MCQ tests (Lane et al., 2006) (see Appendix B).

The author's research has illustrated how learning technologies offer opportunities for learners to take an "active" part in their learning process (Karagiorgi and Symeou,

2005). Technology has been used to develop problem based learning environments that reflect challenges that occur in the real world (Leung, 2003). This has enabled students to construct meaning from the use of the technologies. Indeed, from a constructivist perspective, Leung (2003) notes the importance of learning technologies in generating authenticity for effective learning to occur. This can be in the form of both "cognitive" and "contextual" authenticity (Squires, 1999). The author's body of work has researched the use of virtual learning environments in developing constructivist approaches to learning.

Lane, Dale and Horrell (2006) have used a constructivist approach when engaging students in the use of MCQs using a VLE. This work builds upon Piaget's (1969) ideas concerning knowledge acquisition and constructivist learning. The author's research on MCQ tests (Lane et al., 2006) provided a differentiated learning model of understanding engagement, which can be an effective way of engaging learners with disparate academic abilities. Wang (2007) has found that web based formative assessment of this kind is more effective than traditional methods of testing (i.e. pen and paper based formats). The approach taken by Lane et al. also acts as a means of self-assessment. This could promote students confidence levels towards attaining appropriate learning outcomes, which is the main method through which student achievement is measured (Cassidy, 2007).

The aim of the study was to use differentiated online learning material with a Level 1 statistics module for undergraduate sport students and examine relationships between student performance on differentiated tests and module performance. The author's developed differentiated learning material by producing a series of hard and easy

multiple-choice questions. The questions were additionally differentiated by varying the amount of time the student had to answer the questions and by reducing the amount of options available to answer the easy tests. Students constructed their thinking about the responses to the questions by using online material from the VLE. From a behaviourist perspective, the student's knowledge base was reinforced through immediate feedback from answering the MCQs. The means of positive reinforcement by providing immediate feedback in the MCQs enabled the students to progress from the "easy" to the "harder" questions. This would be through a process of assimilating the information for the purposes of attempting to get the answer correct.

If the student incorrectly answers a question this to some extent generates a state of disequilibrium. This state of disequilibrium leads students to a sense of "self discovery", through researching and exploring different perspectives, in an attempt to construct new meaning. This would be derived from the feedback offered in the question, in addition to the use of the online material. The differentiated tests therefore provided students with opportunities to construct their understanding of the subject matter, so as to restore equilibrium. The research found that module performance was significantly related to performance on the tests. Furthermore, attendance at lectures was not paramount in students being successful in the MCQ tests (Lane et al., 2006).

Constructivist learning has been criticised for assuming that the construction of knowledge can be developed through autonomous activity (Wood and Bennett, 1998). Palmer (2005) notes how an assumption of constructivist learning is the requirement

of effort and motivation from the learner, which can lead to frustration. Furthermore, it should not be assumed that activities developed for "active" participation will engender enthusiasm amongst all learners (Fox, 2001). Participation can be influenced by issues concerning self-esteem and the quality of relationships with others (Cornu and Collins, 2004). Indeed, Terwel (1999) argues that constructivism does not offer any practical guidelines for the development of inquiring communities, or the avoidance of poor interaction amongst students.

When exploring engagement with VLE's, Dale and Lane (2007) note how interaction can be limited at times. Poor interaction was argued to derive from feelings of a lack of self-confidence and poor motivation amongst students. Constructivist models of learning also place an over emphasis on the individual, as opposed to social and cultural learning when interacting with adults and peers (Jordan et al., 2008). Indeed, a limitation of Lane, Dale and Horrell's (2006) research were the additional learning processes that may have occurred in the students completing the tests. There was the possibility that students could have completed the tests with their peers. Though this presents a limitation to the research, it should be acknowledged that this would have still engaged the students in constructing meaning from the MCQs, but from a social constructivist approach to learning.

2.5 Social Constructivism

Social constructivism acknowledges the importance of culture and context in forming understanding (McMahon, 1997; Wise and Quealy, 2006). Learning is driven through the social and cultural contexts through which the knowledge was constructed (Hung,

2001; Palmer, 2005). The word social is used as the construction of meaning is developed through interaction with others (Hung, 2001; Azzarito and Ennis, 2003; Hung et al., 2003) including adults and peers, in order to negotiate meaning (Palmer, 2005). The "truth" or "reality" of a situation emerges from the consensus of the constructions that emerge in a social grouping (Adams, 2006). Tutors are viewed as being pivotal in supporting learners and their social construction of meaning. The social constructivist school of learning builds upon the work of Vygotsky (1978). Vygotsky argued that learning is not a solitary activity but is "grounded in a system of social relations" (Macellan, 2005, p.139). He argues that tools, such as language, are used for social interaction and knowledge construction (Jordan et al., 2008). McGregor (2007) notes how social constructivists such as Vygotsky, "value and support the development of dialogic exchange because it is seen as pivotal in transforming cognitive activity into a more tangible form" (p56). The internalisation of this process enables learning to occur (Vygotsky, 1978) and critical skills are developed through the internalisation of dialogical argumentation (Ravenscroft, 2003).

Bruner (1987) used the term "scaffolding" to describe how a persons learning can enable them to enter the Zone of Proximal Development (ZPD) (Vygotsky, 1978). The ZPD "is the distance between the actual level as determined by independent problem solving and the higher level of potential development as determined through problem solving under adult guidance or in collaboration with peers" (Vygotsky cited from McGregor 2007, p.56). Learners can therefore co-construct extensions to their existing knowledge (Moran, 2008) and the ZPD acts as a space where learners and teachers interact to develop knowledge (Adams, 2006; Jordan et al., 2008). It is

argued that via the interaction with more advanced learners, students can develop their learning far more than if they were on their own (Palmer, 2005). Collaborative problem solving therefore becomes a social activity, which develops a students learning (Neo, 2003). Furthermore, from a Vygotskian perspective, learning leads development and the teacher plays a more proactive role in the development of learning (McGregor, 2007).

Previous research into eLearning has proposed that scaffolding techniques are required for students to develop deeper learning skills (Dalgarno, 2001; Hughes and Daykin, 2002; Allen, 2005; Cotton and Gresty, 2007; Willet, 2007). Dale and Lane (2004, see Appendix C) propose a three-stage model of engagement when using online discussion forums. This acts as a basis for scaffolding a students learning. The authors note how students are able to construct meaning from the collaborative discussions that are made with peers. Online discussions, therefore, enable students to enter their ZPD. Online discussions generate knowledge and an understanding of meaning through the expressions and viewpoints that are articulated amongst peers (Gulati, 2008). The design of this approach has the potential for students to challenge their existing beliefs and assumptions (Bullard, 2003). Dale and Lane (2005) have noted how the tutor should mediate the online discussions to develop further extensions of knowledge and the meaning making process.

Dale and Lane's (2004) model outlines a three-stage process of engaging students in online discussion. This is based upon integrating information from the online discussion into module delivery; initiating a team based approach to forum contributions; and the offering of constructive feedback to students on forum

contributions made. The author's body of research has noted the importance of a feedback mechanism that enables students to be given guidance and direction on their constructions of the knowledge learnt. Dale and Lane (2004) acknowledge how the lecturer needs to offer clear and constructive feedback to students on their forum contributions. However, they also note how negative reinforcement can result in disengagement. This is consistent with behaviourist learning theory and more specifically Skinner's (1938) research into operant conditioning. "Emotional scaffolding" and assisting students in their ability to cope in these situations also becomes an important part of the learning process (Zembylas, 2005). Furthermore, online discussions that are time constrained and defined by what is to be discussed, can limit knowledge construction and enforce conformist learning behaviour (Gulati, 2008).

The author's contend that this approach is useful in promoting engagement with forum discussions which students may be reticent to participate in, due to feelings of embarrassment (Dale and Lane, 2007 see Appendix D). Indeed, research conducted since this publication continues to recognise difficulties in sustaining collaborative online discussions (Downing et al., 2007). Drawing upon Foucauldian theory on surveillance and power, some contend that online discussions can give rise to disciplinary power relationships between the tutor and student (Gulati, 2008; Maltby and Mackie, 2009). As online learning operates in a culture of "surveillance" participation can result in power differentials between the tutor and the student and also amongst students themselves, where others are seen to be participating more in the discussions (Gulati, 2008). The assertions forwarded in Dale and Lane's (2004) model are therefore supported by Ellis et al. (2007) who note how the student's

perceived value of online discussions can be promoted in synergy with interaction in a traditional face-to-face discussion context.

As discussed in the author's previous research (Lane et al., 2006) scaffolding can be achieved through the use of differentiated learning techniques (McGregor, 2007). Though the author's research identifies how the creation and development of online learning materials for differentiated work, involves correctly identifying students' skills, which places additional pressure on the time constraints of lecturers (Lane et al., 2006). Handley and Cox (2007) found results that were consistent with the author's research. They contend, that online feedback should use non-verification methods based upon relating feedback to real life examples and issues that enable students to structure their understanding of the problem. However, as online feedback can be an acquired skill, guidelines are required that offer direction to tutors on feedback of this nature.

The author's research into iPod technologies draws upon constructivist and social constructivist approaches to learning. The context of the author's research has focused upon the performing arts and tourism subject areas and has outlined the pervasive influence of iPod technologies when used as part of a blended learning approach. Dale and Pymm (2009, see Appendix E) have discussed the cultural iconicness of the iPod, which has popularised it as a media and digital device. The iPod has been used as a device that can play an active role in facilitating the process of learning. The author's research has explored how the device has been used to guide the learner in the development of their understanding of the subject matter (Dale, 2007; Dale and Hassanien, 2008; Cooper, Dale and Spencer, 2009; Dale and Pymm, 2009). The iPod

was used to develop authentic learning experiences. Dale and Pymm (2009) explored how the iPod was used within the performing arts as both an instructional tool and as central to the learning process. Students collectively used the iPod to generate music, drama and dance performances, resulting in a number of learning experiences.

The author's research explored how the iPod facilitated the construction of meaning through the promotion of creativity (Dale, 2008; Dale and Pymm, 2009). Dale (2008, see Appendix F) has critiqued the subject of creativity when exploring the use of technologies to engage learners. Dale's research has recognised the difficulties in attempting to define creativity and recent research has further elevated this, as an issue of confusion, amongst students in HE (Walker and Gleaves, 2008). In reviewing the theory, Dale notes how different conceptions of understanding creativity exist and how creative tensions in HE can inhibit its development amongst learners.

By reflecting upon his previous research, Dale also notes how HE practices have inhibited the development and assessment of creative ability. Furthermore, in acknowledging Dale and McCarthy's (2006) research, the development of creativity has been compounded by the focus upon didactic approaches to delivery and instrumentalist approaches to learning. Dale addresses the role of new technologies in developing creativity and specifically focuses on the role of the iPod in this respect. Dale's paper analysed how a sample of performing arts tutors have perceived the use of the iPod in their subject areas, as a device for developing creativity amongst their students and in their own learning and teaching practices. Whereas previous research has focused predominately on the learner, Dale's paper is innovative in that it addresses creativity from a tutor perspective.

Constructivist learning theories have acknowledged how play can promote learning. From a Piagetian perspective, Wood and Bennett (1998) contend that play is not the same as learning, but is able to facilitate learning, through the interaction with new experiences. From a Vygotskian perspective, play can generate ZPD and develop actual to higher levels of learning (Bodrova, 2008). Prentice (2000) notes how technologies have blurred the boundaries between work and play. Though, recent research by Lee and Chan (2007) has found that students have clear boundaries when using their mobile devices (such as iPods) for leisure or work/learning, the author's research has found that the blurring between work and play was a key factor that promoted creativity in learning and teaching. The iPod was also found to promote creativity through the element of "risk". Dale and Pymm (2009) acknowledged the "disruptive" nature of the iPod as a device and found that the risk in its use generated the development of creativity in learning and teaching. Indeed, the research observed how the iPod empowered tutors to think more creatively about their learning and teaching strategies. This confirms recent research, which has further endorsed the role of new technologies for developing creativity amongst teachers (Wood and Ashfield, 2008).

The construction of meaning can be driven through not just language but the use of all the senses (McGregor, 2007). The author's research has found that iPod technologies offer a sensory experience that goes beyond the written word (Dale and Pymm, 2008). The research explored how the iPod encapsulated the visual and aural senses. This acknowledges the memletic view of learning styles (Whiteley, 2003) and the use of multiple senses for learning engagement. Indeed, the construction of learning through

the senses characterises the way in which modern day students communicate and learn (Prensky, 2000; Dziuban et al., 2007).

As a paradigm, social constructivism has been argued to favour collective over individual meanings and is therefore, socially deterministic in ethos (Watkins, 2000). Watkins (2000) therefore contends that theoretically it parallels the "behaviourists contention that meaning is environmentally determined" (p100). Furthermore, it cannot be assumed that all social situations promote learning (Perry and Dockett, 1998) and if learning does occur, learners can project meaning that is interpreted as being socially acceptable (Adams, 2006).

Research has also illustrated that lecturers can be counter to social constructivist teaching methods and can see no association between this approach and the development of a students theoretical knowledge (Hanson and Sinclair, 2008). Furthermore, Fox (2001) contends that the focus on teaching as a shared construction of knowledge can neglect the emphasis of learning on individual practice and problem solving with the acquisition and revision of skills. Though constructivist and social constructivist learning theories go someway to understanding learner engagement with technologies, they are limited in more widely understanding how learners engage and learn from instantaneous and mobile knowledge sources that are "pushed" out to students.

2.6 Connectivism and Navigationalism

It is acknowledged that learning theories including behaviourism, cognitivism and constructivism have emerged within the context of traditional methods of learning and teaching. They therefore do not fully take account of the influence of new technological innovations on learning engagement (Barnes and Tynan, 2007). These innovations are argued to have developed a generation of "digital natives" (Prensky, 2001) who are characterised as digitally literate, connected, prefer immediacy and experiential learning, are social, prefer team-based work that is structured and are visual and kinesthetic in learning style (Oblinger and Oblinger, 2005).

The author's research acknowledges the changing dynamic of the learning context and the connections that learners make with knowledge and understanding. This has been influenced by the use of social media and Web 2.0 technologies, which have generated a culture of learning that transcends the personal to the social (Dale and Pymm, 2009). These approaches are consistent with emergent learning theories including connectivism (Siemens, 2005) and navigationalism (Brown, 2006). Though relatively untested, these perspectives are argued to be having a growing influence on learning theory (Barnes and Tynan, 2007; McLoughlin and Lee, 2008).

In forwarding his theory of connectivism, Siemens (2005) argues that traditional learning theories such as behaviourism, cognitivism and constructivism "are concerned with the actual process of learning, not with the value of what is being learned" (Siemens, 2005). Connectivism is based upon the premise that learning starts with the connections that students make and not with a fixed body of content (Barnes

and Tynan, 2007). Learning is, therefore, actionable knowledge that can reside outside of ourselves and is facilitated through non-human appliances (Siemens, 2005). In presenting his theory of "navigationalism" Brown (2006) contends that educators should assume a coaching and mentoring role and become the "source" of how to navigate through this knowledge (Brown, 2006). This includes not only the technical skills of surfing the web, but also the more complex skills of "testing, evaluating and engaging with information and thus transforming it into reliable knowledge" (Moran, 2008, p.219).

Both connectivism and navigationalism acknowledge the influence of chaos and networking theory in the process of learning. Siemens (2005) contends that learning is a process that "occurs within multiple overlapping environments of dynamic core elements that support the amplification of learning, knowledge and understanding through the extension of a personal network". The focus is on social interaction, connection and collaboration, as opposed to just the learning processes involved with the individual (McLoughlin and Lee, 2008). In the same vein as socio constructivist theory, the tutor's role is to act as a mediator in the learning process. However, in this context learning is not purely content driven, but begins and is maintained through the connections that students make (Barnes and Tynan, 2007). In navigating knowledge, therefore, learners require key skills such as sense making, chaos management and the ability to assess valid opinion and incorrect information (Brown, 2006).

The principles of connectivism and navigationalism are consistent with the author's research into podcasting and learning. Podcasting enables the separation of the tutor and student from the traditional place of learning and Dale (2007) has identified the

advantages that can be associated with this as a learning medium (see Appendix G for an overview of the literature on podcasting). The research has found that podcasting is effective for supporting student learning (Dale and Hassanien, 2008, see Appendix H, Cooper, Dale and Spencer, 2009, see Appendix I, Dale and Pymm, 2009, see Appendix E) and this confirms the findings of others on the use of podcasting as a delivery mechanism (Copely, 2007; Shim et al., 2007; Evans, 2008).

The author's research into enhanced podcasting which incorporates audio, visual and web based material found that students were able to connect with knowledge and information sources outside of the traditional learning context. The knowledge is "pushed" out to students through the use of Really Simple Syndication (RSS) protocols which the research has found, promotes the development of critical reflection and the reinforcement of learning away from the classroom environment (Dale, 2007; Dale and Hassanien, 2008; Cooper, Dale and Spencer, 2009). Dale (2007) and Dale and Hassanien (2008) recognise how this information can develop the student's deeper understanding of the subject matter and offer a sense of the learner being in control of the learning material.

The author's research has found that knowledge can be consumed as part of a mobile learning experience. This mobility generates flexibility of learning engagement, enabling learners to learn, anytime, anyplace, anywhere (Dale and Pymm, 2009). Though recent research has noted some differences in the mobility of experiencing podcasts by different cohorts of students (Copley, 2007; Lee and Chan, 2007; Evans, 2008). Furthermore, the author's research (Cooper et al., 2009; Dale and Hassanien, 2008) has found that podcasting is not a replacement for traditional lectures, but acts

as a mechanism for disseminating supporting content. Indeed, consistent with the author's research, Copley has found that podcasts would not influence whether a student would attend a lecture or not, as this provides for interaction and a "structured learning environment" (Copley, 2007, p.398). The research therefore, contends that podcasts should be used in tandem with traditional methods of learning (Cooper, Dale and Spencer, 2009).

A key tenet of connectivism is the potential for learners to generate knowledge (McLoughlin and Lee, 2008). Paavola and Hakkarainen (2005) contend that cognitive and social processes alone cannot account for the development of expertise and propose an alternative "knowledge creation view". Basing their research upon Paavola and Hakkarainen's (2005) three metaphors of learning; the acquisition metaphor; the participation metaphor and the knowledge creation metaphor, Lee et al., (2008) found that students developed greater potential for knowledge building when using learner generated content. Lee et al. comment that students "are there not to simply participate in activity and acquire skills, but also to produce shared outcomes and advance the intellectual capital of the group" (p510). The author's research acknowledged how iPod technologies enabled the empowerment of learning. Dale and Pymm (2009) noted how learners shared their learning materials with friends and family, thus generating a sense of self-esteem and motivation to learn.

The research has found that different learner behaviours between different subject cohorts of students are apparent when using podcasting. Dale and Hassanien (2008) found that students will often engage with podcasts that assist them in their assessed work, thus denoting a strategic and instrumentalist approach. Recent research has

found similar findings towards engagement with educational podcasts (Lee and Chan, 2007) and the use of podcasting for revision (Evans, 2008). Though the author's research has confirmed the findings of others, (Copely, 2007; Evans, 2008) that podcasts are useful for students with different learning needs including international students and those with dyslexia, it should not be assumed that all students are technologically capable.

Both connectivism and navigationalism assume that learners are technologically literate and are freely able to connect and navigate different knowledge sources. The diversity of students that now enter into HE require differentiated strategies for engagement, both in terms of learning and the awareness of the technology. The author's research noted how some students were unclear about how to use the podcasts for their learning. In this respect the research finds that students need to understand how to use the technology and understand the extent to which it supports their learning (Dale and Hassanien, 2008).

This further confirms the thoughts of Copley (2007) who found students were unclear about what podcasts are for and how to access them. Furthermore, it is contended that constructivist and behaviourist learning paradigms are required for information retrieved from electronic sources, such as podcasting, to become "true justified beliefs" and subsequently understood as knowledge (Moran, 2008). It is also contended that as a learning theory connectivism is not placed at an instructional level and therefore is merely a pedagogical view (Verhagen, 2006). Furthermore, connectivism argues that learning takes place as a process of the networks that are

created. Whereas, others contend that learning "is a process that takes place within a participation framework and an individuals mind" (Ravenscroft, 2003, p.11).

2.7 Chapter Summary

The chapter has discussed different paradigms relating to learning theory and critically reviewed the contribution that the published body of work has made in this area. Whilst not asserting one learning paradigm over another, the research has acknowledged their position in relation to the published works. Whereas, from a behaviourist perspective, computer based testing was found to be effective for reinforcing learning, the research also found, from a cognitivist perspective, that different learning behaviours prevail. From a constructivist perspective the research has recognised how technologies can promote active and authentic learning experiences. Drawing upon social constructivist viewpoints, the research has noted how technologies can scaffold a students learning, enabling the construction of meaning with others. This can be developed through the embedding of differentiation, creativity and play in the learning experience. The body of research has also acknowledged how connectivist and navigationalist learning theories are influencing engagement through the use of podcasting and learner generated content.

The research has culminated in a number of research questions that have informed the development of the methodology for the published works. When exploring the use of technologies there is an emphasis on using quantitative approaches as a sole method in the research. The use of mixed methodologies has the potential to reveal further data on learning behaviours and approaches towards using technologies. The

philosophical positioning of existing research is also unclear. The next chapter will acknowledge the philosophical position of the author and discuss the methodological approaches that the research projects have undertaken.

3.0 Chapter Three – Methodology

3.1 Introduction

The following chapter will initially include a discussion of the ontological and epistemological stance that the author has taken to the overarching body of research. This will be followed by a critical review of the methodological approaches and the research methods that the author has undertaken in the process of conducting the research. In doing so the chapter will address criteria when considering the trustworthiness of the research. The chapter will then discuss the role of reflexivity in the thesis and reflect upon the impact of the author's values on the research that has been undertaken. Finally, ethical matters undertaken in the research will be debated.

3.2 Philosophical position

Ontology is the study of being and concerns attitudes to reality (Philimore and Goodson, 2004). Ontological positions are often argued to be based upon a continuum (Miles and Huberman, 1994) that includes positivism, post-positivism, critical and interpretivist paradigms (Philimore and Goodson, 2004; Ayikorou, 2009). Collectively, the author's body of research takes a post-positivist position. Positivism contends that an objective and unchanging reality exists (Philimore and Goodson, 2004) and causal relationships can be revealed between phenomena (Ayikoru, 2009). In contrast, post-positivism acknowledges the infallibilities of positivist approaches to research that require further investigation through triangulation (Denzin and Lincoln, 2008; Tribe, 2008). Post-positivism adopts the use of multiple methods as a basis for

determining reality and to generate and validate theory (Searle, 1999; Denzin and Lincoln, 2008). Post–positivism acknowledges that a single version of reality exists but "that flawed intellectual mechanisms make reality only imperfectly comprehensible" (Philimore and Goodson, 2004, p.12). Therefore, the reality of a situation can only be approximated (Denzin and Lincoln, 2008).

Epistemology concerns what counts as knowledge and explores alternative conceptions of truth (Ayikorou, 2009). Pring (2004) notes how researchers should be eclectic in their search for the truth, arguing that different research questions require different approaches. Post-positivism takes a modified dualist/objectivist epistemology (Ayikoru, 2009). This takes the perspective that the research findings are probably true (Guba and Lincoln, 2005) and the body of research has used mixed methods to capture as much reality as possible (Denzin and Lincoln, 2008). In this respect post-positivism fails to acknowledge the "problem of induction" and that multiple realities of a situation can occur (Lincoln and Guba, 1985). Furthermore, post-positivism assumes that the researcher is value free and can transcend subjectivity in the reproduction of knowledge (Philimore and Goodson, 2004). The author's post-positivist position has influenced the specific objectives of the research and the design of the research processes. These matters will be discussed in the following.

3.3 Methodological Approaches

Whilst recognising the limitations of the researchers post-positivist position, it is argued that this philosophical stance has enabled methodological rigour in both the

collection and analysis of the research. Consistent with a post-positivist epistemology the author has used a combination of quantitative and qualitative methods to improve the generation of research and capture as much reality of the situation as possible (Philimore and Goodson, 2004).

Methodological approaches have been selected to discover the underlying influence of technology as part of the learning process and to explore its implications and associated meanings from a user perspective. The methods selected therefore, have been chosen to suit the problem and research question under investigation (Cousin, 2009). In this respect, Lincoln and Guba (2005) contend that commensurability of methods within paradigms is possible. This is particularly the case when paradigms are axiomatically linked, as is the case in the positivist and post-positivist paradigms. Furthermore, so as not to generate a "false dualism" (Pring, 2004), it is acknowledged that an epistemological awareness of the mix of qualitative and quantitative paradigms is appropriate when exploring different research questions (Cousin, 2009).

Previous research into analysing technologies has predominately taken a quantitative methodology to understanding learner engagement (Dale and Lane, 2007). Studies taking a qualitative approach to researching learning technologies are therefore few in number (Cotton and Gresty, 2007). Consequently, this information influenced the research methods adopted. It should be noted that the research methods are outlined in the individual papers but a further justification of these will be discussed in the following.

Where the author has used quantitative methods (see Lane, Dale and Horrell, 2006; Dale and Hassanien, 2008) these have been used to gather specific information on the use of learning technologies. Quantitative methods are used to test specific hypotheses where the variables are delimited by the researcher. For instance, in the exploration of the use of podcasting, Dale and Hassanien (2008) conducted a questionnaire survey that was analysed using a combination of descriptive statistics and one-sample tests. The data enabled an immediate understanding of the use and adoption of podcasting as a supporting delivery mechanism.

Lane, Dale and Horrell (2006) used statistical information from the VLE database to explore student usage of the differentiated tests that had been set up as part of the study. The data was explored using a combination of descriptive and correlation based analyses including Pearson correlation and discriminant function analysis. Discriminant function analysis is a sophisticated multivariate test. It takes a collection of variables and analyses them simultaneously (de Vaus, 2002). The use of multivariate statistics indicates that the researcher accepts the principle that variables interact, and is not therefore seeking to isolate the effect of one variable on another variable (Tabachnick & Fidell, 2006). This is in contrast to analysing statistics using univariate approaches which fail to take into account the interplay between variables, and moreover, increase the likelihood of finding significance where there is none (Hair et al., 2007). In the context of the research, discriminant function analysis was used to classify the number of students who passed or failed the module from scores on the differentiated tests. The statistics enabled an understanding of performance on the differentiated tests and how this correlated with attendance and overall performance on the module.

Where quantitative methods have been adopted, they were limited in understanding "why" students engage or do not engage, in learning technologies (Riley and Love, 2000; Bryman, 2004). Quantitative methods were effective in establishing exact usage of the technologies and students specific response to them. However, the methods were limited in understanding the "underlying causes" of student responses (Gorard and Taylor, 2004). Therefore, further data were required that would triangulate the statistical analyses and reveal in-depth insights towards learning and learning technologies (Dale and Lane, 2007). Upon this basis, a combination of qualitative methods were used to generate further data. This was achieved through the use of semi-structured interviews and focus groups.

The research by Dale (2008) and Cooper, Dale and Spencer (2009) used semi-structured interviews for generating data. A semi-structured interview approach enabled the experiences of the participants towards learning and learning technologies, to be explored (Jordan and Gibson, 2004). This was in addition to exploring the meanings behind the experiences (Cousin, 2009), which resulted in a deeper analysis of the data. The semi-structured interviews provided a flexible approach to the collation of data (Warren, 2002). Dialogue was generated by probing into the responses made by interviewees (Robson, 2002) using a combination of verbal and non-verbal cues (Cousin, 2009).

In addition to interviews, selected studies took a focus group approach to the collection of data (Dale and McCarthy, 2006; Dale and Lane, 2007, Dale, 2008, Dale and Hassanien, 2008). Focus groups differ from discussion groups in that they are

used to explore a specific topic or issue (Long, 2007). In the context of HE research they have been noted as being effective for exploring student experiences and evaluating educational software and technologies (Cousin, 2009). Where Dale and McCarthy (2006) and Dale and Lane (2007) used focus groups as the sole method for conducting the research, Dale (2008) and Dale and Hassanien (2008) used focus groups as a basis for triangulating the data within the specific research studies. As will be discussed further, a greater degree of trustworthiness could be obtained by combining methodological approaches in this way (see Dale, 2008; Dale and Hassanien, 2008).

The focus of all the studies was to elicit views, opinions and perspectives on the research questions under investigation. Dale and McCarthy (2006) review the effectiveness of using focus groups as a method for collecting data. The use of focus groups promoted the opportunity for the researcher to investigate the saliency of the issues. The research was therefore able to promote a better understanding of the meanings and explanations being espoused by the participants (Dale and McCarthy, 2006). The groups in each of the studies shared similar experiences about the topics under investigation. The group dynamics therefore enabled the researcher to generate a breadth of views and opinions. Ensuring group dynamics in the focus groups was a key factor in the studies, so as to ensure that views were expressed to other members, not directly to the researcher conducting the interview (Morgan, 2002). Furthermore, the researcher ensured that divergent views were encouraged and no one member or members were able to set the moral tone for the discussions (Cousin, 2009), which would have had the potential to skew the data (Thomas, 2004). In the conduct of the focus groups, the researcher ensured that divergent views were encouraged and was

cautious not to engender "groupthink" (Janis, 1972; Fontana and Frey, 2005) where opinions stated would be mutually reinforced amongst focus group members.

In taking an interview and focus group approach to the collection of data, the author was aware of their limitations. Though attention was paid to non-verbal communication during the conduct of the interviews and focus groups, and these were noted, the interviews themselves were not video taped. Therefore, it is acknowledged that the analysis is based upon the written transcripts from the recording of the data. It is further acknowledged that the filtering, and subsequent interpretation, of the responses through the researcher can impact upon the truthfulness of the claims being made (Pring, 2004). In this respect, the epistemological challenges of ensuring a "pure" interview are acknowledged (Miller and Glassner, 1997). Nevertheless, the researcher ensured that the interviews were conducted with sufficient trustworthiness, (to be discussed later) to ensure that as much reality could be captured. Furthermore, during the course of the interviews and focus groups, participants' understanding was checked through recounting their statements (Cohen et al., 2007). This further ensured that the researcher had a confirmation of what was being conveyed by the participant groups and interviewees (Warren, 2002). Indeed, triangulation of the methods, revealed consistent patterns to emerge from the data.

3.4 Reflexivity

Reflexivity concerns how the researcher should reflect upon their position in the research process (Lincoln and Guba, 2005). The researcher should reflect upon their background, and the various biases that may influence the methodologies and

research questions chosen (Ayikou, 2009). This will be influenced by their values, experiences, knowledge, interests, beliefs and ambitions (Cousin, 2009). It is recognised that post-positivism is value free and an objectivist view of reality is given (Guba and Lincoln, 2005; Brannick and Coghlan, 2007). However, it is acknowledged that my own position in the research had the potential to impact upon the responses of the recipients and subsequently the analysis and interpretation of the findings (Guba and Lincoln, 2005; Philimore and Goodson, 2004). The following discussion will justify the author's positionality to the research from a post-positivist stance. This will be reviewed from two reflexive perspectives; epistemic and methodological reflexivity (Johnson and Duberley, 2000 cited from Brannick and Coghlan, 2007). Epistemic reflexivity focuses on the belief systems of the researcher, whereas methodological reflexivity is concerned with the behavioural impact of the researcher in the gathering and analysis of data (Brannick and Coghlan, 2007).

In terms of epistemic reflexivity, it is acknowledged that my own construction of reality is based upon a technologically deterministic perspective. This perspective contends that "new technology is presumed to impact (either positively or negatively) on society replacing what has gone before and producing a predictable set of effects that are presumed to be more or less the same everywhere" (Valentine and Holloway, 2002, p.302). The technological determinist view sees technology as the catalyst for change in society (Roe Smith and Marx, 2004). It is acknowledged that eLearning protagonists (Salmon, 2000; Prensky, 2001; Laurillard, 2002; Brown, 2006; Siemens, 2006) that have been noted in the preceding chapters take a technologically deterministic perspective. However, this view can ignore the impact of technology due to factors including when, where and who is adopting the technology and any

agendas that are associated with its implementation (Valentine and Holloway 2002). Technology is therefore artificially removed from "the normative context of social practice" (Valentine and Holloway, 2002, p.302). This generalist view of technology therefore fails to recognise its context specific application and the power of the user in its application and adoption.

The culture of the institution from which the body of research has emerged also reflects a technology deterministic perspective. Indeed, throughout the duration of the research the author has undertaken a number of job roles, which espouse this culture. This includes acting as the Schools Technology Supported Learning Coordinator, which promotes the use of learning technologies amongst colleagues and their students. The author has also led a cross university Learning Technology and Pedagogic Research Cluster with the focus of supporting a range of projects, exploring the adoption and use of learning technologies with students. In his role as a University lecturer, the author has actively used technologies to support student learning.

From the perspective of methodological reflexivity, the author has taken an outsider perspective to the research. This is in terms of investigating participant opinions on engagement with learning and learning technologies (Dale and McCarthy, 2006; Lane, Dale and Horrell, 2006; Dale and Lane, 2007; Dale and Hassanien, 2008; Cooper, Dale and Spencer, 2009). An outsider perspective enabled the researcher to stand back from the research and maintain objectivity to the research data generated (Le Gallais, 2003; Hellawell, 2006). The researcher perceived here was able to remain detached and neutral to the data (Brannick and Coghlan, 2007), although tests on this

notion are difficult to do. An outsider perspective limited the potential for researcher bias in their perceptions of the research question and the conduct and analysis of the data (Corbin-Dwyer and Buckle, 2009). It further enabled the researcher to expose views and opinions that due to departmental, functional or hierarchical boundaries may have been challenging to obtain (Brannick and Coghlan, 2007). It was therefore possible to observe, maintain and heighten objectivity towards the gathering and analysis of the data (Le Gallais, 2003).

The focus of the body of research has been problem based in nature. This has influenced the specific objectives of the research projects that have been undertaken. Each of the research projects from which the publications have emerged have been funded and supported by the Institute for Learning Enhancement (previously known as the Centre for Excellence in Learning and Teaching). The philosophy of this centre is the improvement of learning and teaching. It is therefore acknowledged that the research projects have been evaluative in nature, focusing specifically on problems that have arisen from the perspective of the author's various roles as highlighted earlier. This is consistent with the post-positivist stance of the researcher as an informer of the situation that the research reveals (Guba and Lincoln, 2005). Though from a critical perspective it is acknowledged that this position has the potential to serve and reinforce managerialist agendas of control via "the finding of technical solutions to problems" (Habermas, 1978 cited from Tribe, 2008, p.246). The positionality of the author has influenced the sample groups that have been adopted in the research.

3.5 Sampling

Where quantitative approaches were used, (Lane, Dale and Horrell, 2006; Dale and Hassanien, 2008), convenience sampling was adopted. The rationale for this approach was based upon two factors. Firstly, was the accessibility to the sample groups. The sample groups were taught directly by the researcher and therefore the response rate could be maximised. Secondly, the objectives and problem-based nature of the research related specifically to the courses, modules and sample groups under investigation. It is acknowledged that as a non-probability sampling framework, the research presents challenges to generalising the data across a wider population (Bryman, 2004). However, the maximum response rate was achieved in the research, thus providing no "non-response error" (Tantawy & Losekoot, 2001).

Similarly, the objectives of the qualitative research projects influenced the choice of interviewees and focus group members. Upon this basis, purposive sampling frameworks were adopted (Dale and McCarthy, 2006; Dale and Lane, 2007; Dale, 2008; Cooper, Dale and Spencer, 2009). This framework is consistent with the author's post-positivist ontology (Decrop, 2004). The sample groups used in the research projects were typical of a new University cohort that adopts a philosophy of widening participation. Sample groups throughout the studies therefore consisted of a mix of age, gender, ethnicity and cultural orientation. This ensured that a mix of responses were generated from the participant groups to the extent that saturation ensured no new insights were forthcoming (Cousin, 2009). Though still reflecting diversity, participants in the focus groups were familiar with one another. This was related to either the course of study (Dale and Lane, 2007; Dale and Hassanien, 2008)

or related interest in the research topic (Dale, 2008). This offered a commonality and central purpose to the discussions amongst participants (Cousin, 2009).

Though the research has revealed similar findings when explored in different subject contexts, it is acknowledged that generalising the data is problematic (Philimore and Goodson, 2004). Furthermore, it is acknowledged that the small and localised nature of the sample groups in the individual projects means that only certain inferences can be made when generalising the research to a wider population (Thomas, 2004). Nevertheless, the triangulation of the research ensured the trustworthiness of the findings and this will be discussed in greater detail.

3.6 Trustworthiness

It is important to assess the reliability and validity of the body of research. Reliability is the extent to which measurement is free of variable errors, whereas validity is concerned with the extent to which measurement is free from systematic error (Brannick and Coghlan, 2007). It is acknowledged that the main body of research has taken a qualitative methodology. It is contended that research of this nature should be evaluated using alternative criteria (Cousin, 2009). Accordingly, the papers will be reviewed against, Lincoln and Guba's (2005) four criteria for establishing the "trustworthiness" of qualitative research. That is credibility; transferability; dependability; and confirmability. From a post-positivist perspective, Decrop (2004) notes how the trustworthiness of research enables further rigour to be brought to the qualitative research process.

The credibility of the research has been addressed through "method triangulation". Method triangulation is the use of multiple methods to explore a research problem (Tashakkori and Teddlie, 1998; Decrop, 2004; Gorard and Taylor, 2004). This is in respect of the methods adopted within specific research studies and across the studies as a whole. Within the studies, Dale and Hassanien (2008) used "across" method (Tashakkori and Teddlie, 1998) triangulation to explore the concept of podcasting in learning and teaching. The rationale for this was based upon the need to corroborate the findings of the questionnaire survey and to further explore points that had emerged from the statistical analysis of the data. Similarly, Dale (2008) used "within" method (Tashakkori and Teddlie, 1998) triangulation (i.e. interviews and focus group) to elicit further opinion about the role of the iPod in developing creativity in learning and teaching. Method triangulation was effective in not only validating the initial research findings but also in being able to elicit further perspectives about the topic (Belhassen and Santos, 2006). Studies where triangulation is used to research learning technologies are relatively few in number, possibly because the use of multiple methods and procedures are time consuming. When triangulation is used, methods within the same quantitative or qualitative paradigm are often adopted (Riley, 2006). The triangulation of the data limited the potential for students to offer favourable and untruthful responses to the questions posed (Walliman, 2001).

In terms of credibility, it is acknowledged that as the author was involved in the collection of the data there is the potential for influencing participant responses (Cousin, 2009). This can come about as a consequence of the researcher-participant power dynamic (Gubrium and Holstein, 2002). Indeed, participants may have felt as though they had to provide responses that mirrored the attitudes and values of the

researcher. This can lead to bias and has the potential to impact upon the trustworthiness of the data generated (Robson, 2002). Dale and Lane (2007) also noted that participants could provide "guarded" responses when being interviewed. However, a degree of "professional distancing" was ensured with the participants (Glesne, 1999) and the research was conducted so participants were freely able to express their thoughts and opinions openly about the topics under exploration. Participant respect resulted in a range of views being expressed about the topics under discussion and this was evidenced in the wealth of data that was generated.

To further address credibility, the interview and focus group data in all the studies was, with participant permission, recorded and transcribed. Following the production of the transcripts, participants were invited to peruse the commentary to ensure it was a correct reflection of their thoughts and opinions (Decrop, 2004). In addition, prior to publication, the studies were presented to the participant groups to verify the analysis of their responses and the theoretical observations being made. When using questionnaires (Dale and Hassanien, 2008), credibility was sought by piloting this prior to the survey being conducted. This made sure that the questions were appropriate for the data that was required for the research.

The "Podagogy" research emerged from a cluster group exploring the use of iPod technologies in learning and teaching. The group consisted of the representative members of the research team exploring the use of iPod technologies in their respective subject contexts. When researching the creative use of iPod technologies amongst the tutors in the cluster (Dale, 2008), the data were presented to the cluster group for verification. Through a process of "member validation" (Bryman, 2004)

comments from the cluster enabled the further structuring of theoretical observations emanating from the research findings.

In terms of transferability, Decrop (2004) notes the use of purposive sampling and the use of "thick descriptions". Thick descriptions were carried out in each of the studies by analysing the data thematically (Dale and McCarthy, 2006; Dale, 2008; Dale and Hassanien, 2008; Cooper, Dale and Spencer, 2009). Thematic analysis enables common themes to emerge inductively from the data (Gray, 2004). The thematic analysis for each of the studies was structured around the discussion topic list. This analysis enabled the researcher to develop thick descriptions around themes that emanated from the research. This was presented in either tabular form (Dale and McCarthy, 2006) or within the context of clear thematic headings that related to the context of the research findings (Dale, 2008; Dale and Hassanien, 2008; Cooper, Dale and Spencer, 2009). The structure of the research thus enables a framework for others to transfer to alternative research contexts.

An audit trail for each of the research projects was developed ensuring "dependability" and "confirmability" of the research. As a requirement of the projects being funded by the Centre for Excellence in Learning and Teaching, the research had to be presented at both an interim stage and upon final completion. The research also had to be written and published as part of an internally distributed publication. This enabled the opportunity for insights and observations from participants and peer groups to comment on the research undertaken. Prior to publication, the body of research was presented at national and international research conferences. Thus, it had the opportunity to be held up for scrutiny by external audiences. These processes

enabled an external audit trail of the collection of data and its interpretation. Minutes were also taken of meetings held by the Podagogy research cluster. This enabled an audit trail to be documented on the emerging discussions about the research and the findings produced by the researcher. It should also be acknowledged that the peer review process that the papers have been subjected to has also ensured the dependability and confirmability of the research. Ethical protocols have also been adhered to when ensuring the trustworthiness of the research and this will be discussed in the following.

3.7 Ethics

Certain guidelines should be adhered to when considering the ethics of research (Israel and Hay, 2006). According to Cousin's (2009) these guidelines include ensuring trustworthiness of the research, having participant respect, gaining informed consent and making sure that participants come to no harm in the conduct of the research (Cousin, 2009). Ethical procedures relating to the trustworthiness of the body of research have been discussed previously. This has acknowledged the author's own reflexive position in relation to the research. From an ethical standpoint, the author has acknowledged there technologically deterministic perception on reality. However, the research was analysed without bias and, as has been noted, the findings were shared with participants to ensure that they reconciled with the views being presented.

Gaining informed consent is an important part of the ethical process (Israel and Hay, 2006) and the researcher ensured that they sought informed consent from participants.

However, the researcher acknowledges the ethical dilemmas that can occur when the tutor is involved in the gathering and analysis of data collected from their own student cohorts (Ritchie, 2006). The power differentials between tutor and students has the potential for participants to feel obliged to take part in the research (Cohen et al., 2007). Through both verbal and written consent participants were fully informed about the conduct of the research and its specific objectives (Kralik et al., 2005). Emphasis of the research being placed on developing valued learning experiences with no harm done to participants (Ritchie, 2006).

On each occasion, participants were offered the opportunity to ask any questions if they required further clarity of information (Wiles et al., 2004). Ongoing informed consent provided participants with the opportunity to withdraw from the research at anytime (Orb et al., 2001; Wiles et al., 2004; Renold et al., 2008). At the beginning of the interviews or focus groups, the ethical parameters of the research were outlined. Participants were informed that their comments would remain anonymous and the write up of the data would not refer to any individual by name. Explanations about the research included the provision of information about the confidentially and security of the data (Wiles et al., 2004). Data has also been stored securely to avoid theft and misuse (Cohen et al., 2007).

The research acknowledged any potential risks to participants (Israel and Hay, 2006). Researching technologies can bring a perception of surveillance amongst participants reinforcing issues of power and control (Gulati, 2008; Maltby and Mackie, 2009). For instance, selected projects used back office functions in the VLE to monitor student engagement (Dale and Lane, 2006; Lane, Dale and Horrell, 2006; Dale and Lane,

2007). However, participants were fully informed about the research project at the beginning of the module and ethical approval was sought. Furthermore, the research findings suggest that this factor did not influence student engagement with the technologies.

In an attempt to minimise possible harm was made to participant groups, the researcher ensured fairness and equity in the research process. Participant groups were not advantaged or disadvantaged when engaging in the research. In the exploration of VLEs and podcasting the researcher ensured that the entire cohort should be involved in the research. The use of a control group that could be compared to another group that was not using the technologies would have had the potential for advantaging one group over another. This could also have generated conflict between groups and created a Hawthorne effect (Mayo, 1949), thus impacting upon the validity of the data. It should be noted that the methods used in the research are established in the literature and these are discussed within the context of the respective publications. A review of research findings shows no indication that the use of such methods in educational settings has been associated with potentially harmful effects.

3.8 Limitations

The limitations of the body of research should be recognised. The author's research has been limited by a number of factors, many of which have been noted in the published body of research and in the aforementioned discussion. From these, a number of overarching limitations are noted.

Firstly, in the conduct of the studies the author acknowledges their own positionality to the research (Cousins, 2009). This had the potential to impact upon the sample groups being researched. There were issues of tutor power to the student groups being interviewed. Furthermore, the responses from the sample research groups may have been influenced by the author's enthusiasm for technologies rather than their use as supplementary delivery mechanism (Hughes and Daykin, 2002). However, in the conduct of the research the author was cautious in positioning himself so leading responses would not occur (Cousin, 2009). In acknowledging the positionality of participant members (Ritchie and Rigano, 2001) power differentials can also result amongst student participants. As mentioned earlier, participants may feel reluctant to speak openly in front of others due to how their remarks might be interpreted by others (Ritchie and Rigano, 2001). Though evidence from the body of research suggests that participant members spoke openly during the focus groups and interviews.

Secondly, the rapid evolution of technologies, which can quickly supersede others, presents limitations on the research. The body of research has been constrained by the shifts that can rapidly emerge in learning technologies. The author's research into iPod technologies has evolved as a consequence of the rate in which the technology has developed. Whereas, the author's early research in this area focused on the static use of images, the development of later generations of the iPod enabled the research to analyse student engagement with moving images (Dale and Pymm, 2009). In common with recent research, the author recognises that there is further scope to

analyse the effects of learning technologies on student engagement longitudinally (Selwyn, 2008).

Thirdly, this can be further compounded by the novelty effects of technology (Allen, 2003; Palmer, 2005). The research has observed how technologies can be perceived as being better then traditional methods of learning and teaching due to their newness (Dale and Lane, 2007; Dale, 2008). There is the possibility that the novelty effects may skew the data towards positive outcomes. This then contributes to arguments that all learning technologies are good and justify their cost (McDougall and Jones, 2006). Furthermore, it should also be recognised that opinions of the participants can change over time (Veal, 1997). As mentioned previously, the research should be explored longitudinally. However, the novelty effects of technology could also be seen as a benefit with the research actively engaging student's interest in the latest innovations.

Fourthly, in specific studies, the research has revealed some contrasting findings. In the context of the podcasting research different explanations were given about the use of podcasts for the purposes of mobile learning. Contrasting findings by Dale and Hassanien (2008) and Cooper, Dale and Spencer (2009) have found that tourism students did not tend to interact with the podcasts on the go, whereas music students perceive this to be a key part of their learning experience. Though within the context of the author's research, he acknowledges that this difference could be due to the fact that the sample group of music students was given an iPod Video and this was central to the research project. This may suggest why this sample group was more receptive to using the podcasts as part of a mobile learning experience.

Fifthly, it is acknowledged that the research has emanated from the author's own institutional context. In the case of the research into VLEs, caution should therefore be made in generalising the research across other HEIs using alternative VLEs, as user experiences could be different. Nevertheless, the author's research enlightens our understanding of learner engagement with aspects of functionality that are common across all VLE platforms. The transferability of the research should be applied to alternative VLE and institutional contexts.

3.9 Chapter Summary

The chapter has discussed the author's ontological and epistemological position to the body of research. This was followed by a discussion of the methodologies that have been adopted and the methods used. The author's own positionality to the research and the influence of this has also been acknowledged. Finally, the ethics and limitations of the research have been addressed. The following chapter will present the pedagogical framework that brings together the different perspectives of the author's research.

4.0 Chapter Four - A Pedagogical Framework for Engaging the Networked Learner

4.1 Introduction

The thesis has critically reviewed the context of the author's body of research and its relationship to learning theory. The methodology and methodological approaches that have been adopted when gathering the research have also been discussed. The following chapter presents a framework (Figure 1), which draws together the author's body of research. The framework will initially be introduced. A discussion of the component parts of the framework and its contribution to knowledge will then be provided. This will be justified by continuing to critically reflect upon learning theory. A set of practical guidelines for engaging the networked learner will then be discussed.

4.2 The Framework

In the introduction to the thesis, the author noted the lack of conceptual frameworks for understanding learner engagement with technologies (Laurillard, 2002; Unwin, 2007). In Figure 1, a framework is proposed that extracts key themes that have emerged from the body of research. Acknowledging arguments that learning and eLearning should be based upon sound pedagogical principles (Bullard, 2003; Buckley et al., 2008), the framework outlines the role of student engagement in the process. Consistent with the author's post-positivist position, the framework

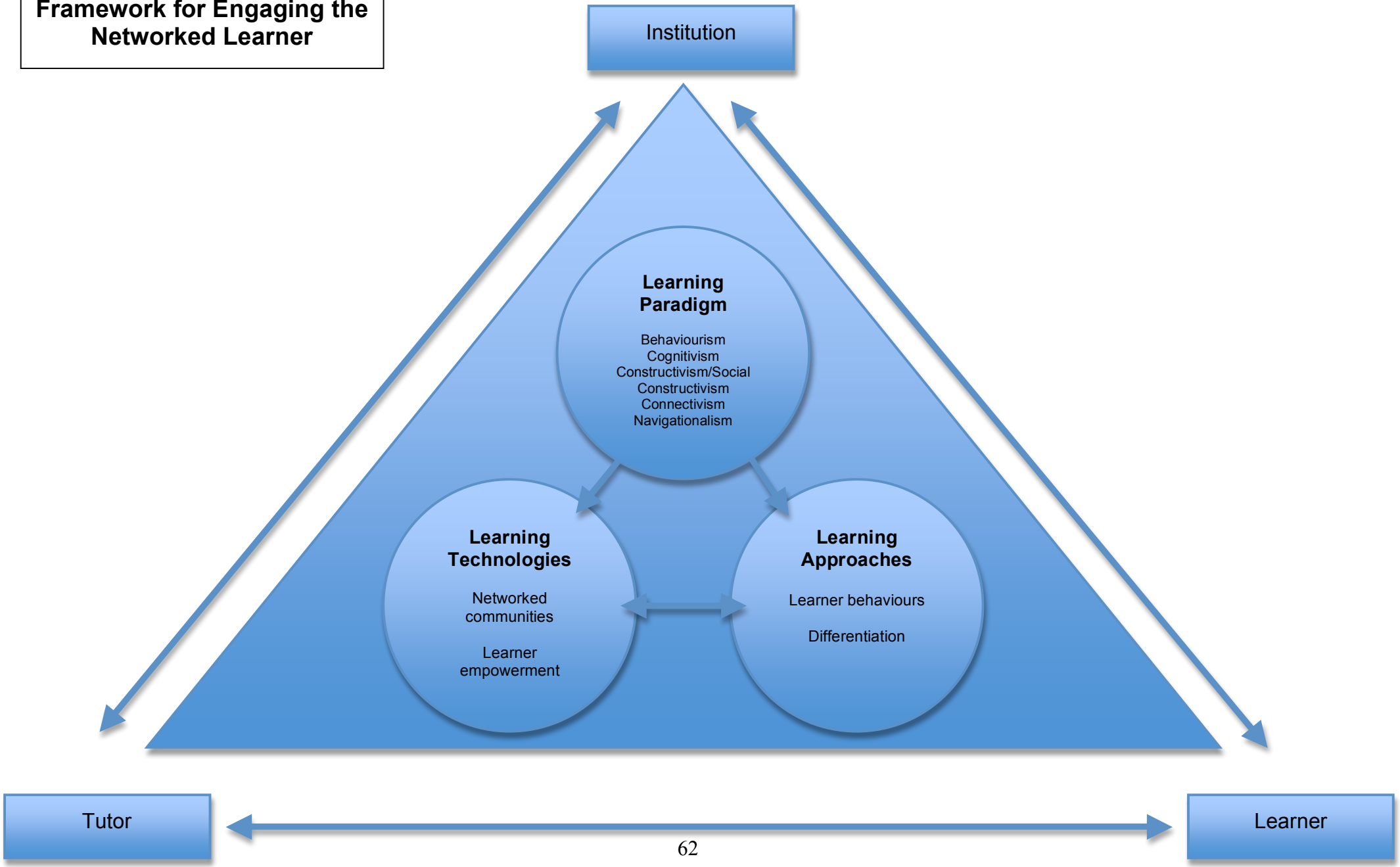
represents an approximated reality that has transpired from the body of research (Denzin and Lincoln, 2008).

The pedagogical approach that is being taken to underpin learning needs to be clearly stated (Adams, 2004). Yet it is contended that existing pedagogical frameworks often take a linear approach to understanding the eLearning experience (Salmon, 2000; Laurillard, 2002; Brown, 2006). These frameworks can thus be reductionist in nature and are limited in their potential to fully embrace interconnected and non-linear learner experiences (Levy, 2006). The central theme of the framework are the learning paradigms that are being adopted to engage learners. Not withstanding the previously discussed limitations of the selected learning paradigms, the author acknowledges the overlap of these paradigms whilst recognising their epistemological basis when comparing differences between them (Watkins, 2000).

The framework is structured around the key thematic perspectives that have emerged from the author's body of research and which have been discussed in the previous chapters. Central to the framework are the selected "Learning Paradigms" that underpin learning theory and which have been reviewed within the context of the author's research in Chapter 2. These theories act as the foundation for using "Learning Technologies" and for understanding the different "Learning Approaches" of students. These are two aspects, which further strengthen the author's body of research and will be discussed more fully in this chapter. Each of the three perspectives is centred within a tripartite structure that involves a reciprocal relationship between the institution, tutor and learner. Key themes have emerged from the research that are pertinent to each of these stakeholders. Each of these

stakeholders will be underpinned with a set of practical guidelines for supporting the networked learner.

Figure 1 - A Pedagogical Framework for Engaging the Networked Learner



4.3 Learning Technologies

Previous research contends that technology should not be seen as the driver for learning (Adams, 2004) and its use should be based upon sound pedagogical principles (Delgarno, 2001). Others note the importance of developing conditions that facilitate students to be involved in the learning process (Al-Weher, 2004). The discussion in Chapter 2 has acknowledged how the respective learning theories act as a basis for understanding the development of conditions for learning. The author's research on technologies has revealed tenets, which are consistent with different learning theories. Indeed, autonomy and interest are fundamental tenets of constructivist approaches to learning and student engagement (Castle, 1997; Bullard, 2003). The author's research has demonstrated how meaningful experiences can be developed through the use of technologies (Lane, Dale and Horrell, 2006; Dale, 2008; Cooper, Dale and Spencer, 2009; Dale and Pymm, 2009).

Drawing upon the thoughts of Dewey, Kivinen and Ristela (2003) contend that learning is promoted when individuals are not aware that they are studying. Evidence from the author's research suggests that students are receptive to the informality of using technologies as part of their learning experience (Dale and Pymm, 2009). This, in part, has been engendered through the connectivist (Siemens, 2005) and navigationalist (Brown, 2006) nature of the student experience and the blurring between time, space, leisure and learning (Bull, 2005). The author's research has revealed two key factors that underpin the use of technologies when engaging learners. That is, the development of networked communities and the promotion of learner empowerment.

4.3.1 Networked Communities

Previous studies have posited the development of communities of practice through the use of blended eLearning technologies (Hung and Der-Thang, 2001; Oravec, 2003; Schweizer et al., 2003; Sloman and Reynolds, 2003; Seale, 2004; Guildberg and Pilkington, 2006). A "community of practice" (Lave and Wenger, 1991) indicates a social grouping that has a common purpose for sharing knowledge and learning (Wenger, 2004; Papastergiou, 2007; Rovai, 2007). From a social constructivist perspective, it is the interdependence of learners on each other (Ewing, 2000) and the development of a "learning community" where there is the exchange of information, ideas and knowledge (Azzarito and Ennis, 2003). The learner becomes a participant where the knowledge is used, and it is in this context where learning occurs (Lave and Wenger, 1991).

Learning becomes a process of the interaction that takes place with others (Willet, 2007). As has been noted previously, the potential to develop networks that facilitate social interaction is also central to a connectivist perspective. Stacey et al., (2004) acknowledges how technologies act as a basis for non face-to-face communication wherever they are situated. When these communities of practice transcend technological networks they can be described as "electronic networks of practice" (eNOPs) (Whelen, 2007), "learning networks" (Wise and Quealy 2006) or "networked communities" (Guildberg and Pilkington, 2006). Networked communities are facilitated across time and spatial zones and exist due to an idea or task as opposed to a place (Wellman, 2003; Guildberg and Pilkington, 2006).

Learning that is part of a networked community is situated and requires embedding in meaningful and authentic situations (Brown et al., 1989; Lave and Wenger, 1991; Ben-Ari, 2004). Development of meaning is facilitated through social interaction and the generation of knowledge facilitated through shared experiences (Ewing, 2000; Hodgkinson-Williams et al., 2008). This is promoted through the "negotiation of meaning" which is facilitated by the interaction between participation and reification (Wenger, 1998). Participation is based upon active engagement where reification denotes the production of objects that give meaning to the experience (Seale, 2004). According to Innes et al., (2006) these should be in the form of "learning" objects as opposed to "information" objects, which promote interaction, discussion and reflection.

The author's research has noted how the use of technologies, as a reification tool, has developed learning objects that facilitate meaning making. This has been in the form of discussion forums (Dale and Lane, 2004), MCQs (Lane, Dale and Horrell, 2006), and the podcasts (Dale, 2008; Dale and Hassanien, 2008; Cooper, Dale and Spencer, 2009). From a participatory perspective, the author's research has illustrated how learners have the opportunity to share knowledge and information in creative ways (Dale, 2008; Dale and Hassanien, 2008; Cooper, Dale and Spencer, 2009). This has been through the use of image and audio as a means for sharing ideas, thoughts and experiences with others (Prensky, 2000; Dziuban et al., 2007). When drawing together social constructivist and connectivist learning theories, the research has acknowledged how the ability to network has promoted greater sense making amongst students (Ewing, 2000). Through the use of podcasting, in particular, the research has noted the "pushing" and sharing of knowledge in multiple ways, thus providing

opportunities for meaning making. This includes developing a connection amongst learners, between learners and teachers, between learners and authentic real world experiences and between learners and themselves (Azzarito and Ennis, 2003).

Lave and Wenger (1991) use the term "legitimate peripheral participation" to analyse how learners move from the periphery to the centre of communities of practice as they become more involved. Enculturation of members being a key aspect of this process (Ben-Ari, 2004). Though, in the context of eLearning, Willett (2007) questions the power relations and formation of identities which are enacted in these environments. Furthermore, the extent to which technologies can generate real situations has been questioned (Ben-Ari, 2004). Though technologies can promote greater networking, they can simultaneously create a feeling of distance (Ewing, 2000).

Social presence such as eye contact, vocal intonations, physical distance and facial expressions (Hewitt, 2005) have been argued to have inhibited the development of learning using web based technologies (di Gennaro and Dutton, 2007; Rovai, 2007). This confirms the findings of the author's research and the student's feelings of impersonality when using discussion forums (Dale and Lane, 2007). Though, Papastergiou (2007) contends that the use of discussion forums provides resources beyond the expiration of the course, which he argues, offers authentic learning experiences that mimic real-life. di Gennaro and Dutton (2007) also acknowledge previous research that argues the formation of "hyper-personal" relationships via online communications where greater feelings of intimacy are generated as a consequence of the online interaction.

4.3.2 Learner empowerment

Constructivism tends to emphasise students' engagement in creating personally meaningful knowledge (Adams, 2004) and learner autonomy (Ewing, 2000). Technologies have been argued to promote opportunities for autonomy in learning (Downing, 2001). The development of learner generated content in many respects takes a radical constructivist perspective (Perkins, 1991 cited from Delgarno, 2001). Learners are given the autonomy and freedom to generate knowledge with the tutor acting as a facilitator of this knowledge (Dalgarno, 2001; Hunter, 2008). Thus, in contrast to traditional learning paradigms, Siemens (2005) argues that "learning is no longer an internal, individualistic activity".

Web 2.0 technologies have argued to have brought about collaborative, flexible and interactive leaning opportunities, that have developed a culture of participation where users are empowered to generate reusable learning objects and knowledge (Kamel-Boulos and Wheeler, 2007). The discussion in chapter two acknowledged the development of learner generated content in knowledge building (Paavola & Hakkarainen, 2005; Lee et al., 2008). In this context, Lee and McLoughlin (2007) have described the contemporary learner as a "prosumer". That is, they have the ability to produce the knowledge that they consume. This articulation of understanding is argued to provide students with the development of academic learning (Laurillard, 2002).

The author's research further noted how technologies had the potential to enable learners to take a more active approach to the creation of knowledge and promote

responsibility for their own learning and the learning of others (Dale and Lane, 2004; Lane et al., 2006; Dale and Pymm, 2008; Cooper et al., 2009). However, in acknowledging the theory of navigationalism, the research recognises the role of the tutor in mediating the creation of knowledge. Otherwise feelings of disempowerment could potentially result (Lee et al., 2008).

4.4 Learning Approaches

Constructivism acknowledges that tutors should construct learning experiences that take into consideration students' learning approaches (Bullard, 2003). Recent research by Peters et al., (2008) supports claims made by Dale and McCarthy. When analysing the learning style preferences of sport students, they argue that student preferences were towards practical, kinesthetic and experiential styles of learning. They also note the difficulties students encounter with those aspects of the curriculum which are theoretical and taught in a conventional way (i.e. lecture format). This further confirms the thoughts of Dale and McCarthy in arguing that learning and teaching strategies should be aligned to meet the needs of the preferred learning styles of students (French et al., 2007; Goldfinch and Hughes, 2007; Peters et al., 2008). Indeed, the author's research in this area is consistent with Dewey's (cited from Azzarito and Ennis, 2003) philosophy that the construction of meaning is developed when students have the opportunity to experience situations that have real life characteristics.

The author's research has noted that different learning approaches are adopted by students towards their studies and the use of technologies. These approaches manifest

themselves in the different learning styles and behaviours that students exhibit. This, therefore, requires lecturers to take a differentiated approach towards engaging learners, with an additional recognition that learners have become increasingly empowered and have greater potential to control the knowledge that they consume. Each of these perspectives will be discussed further.

4.4.1 Learner behaviours

The research acknowledges the different learning behaviours that are apparent when students use technologies (Dale and Lane, 2007). The research notes how students can often take a strategic and instrumentalist approach to engagement with online learning (Dale and Lane, 2007; Downing et al., 2007). Though, instrumentalism is not unique to the use of technologies but can be apparent in other areas of student engagement with learning (Ottewill, 2003; Dale and McCarthy, 2006; Stokes and Martin, 2008).

Dale and Lane's (2004) research observed differences in learning behaviour and VLE interaction between first and third year students. Recent research has observed the change in learning styles that can occur as student's progress through their studies (Peters et al., 2008). This behaviour can be driven by a student's assessment motivations (Dale and Lane, 2007; Dale and Hassanien, 2008). Indeed, Phan (2008, p.90) has recently argued that as HE students "progress through their studies, they develop sophisticated epistemological beliefs and adopt appropriate learning styles that may enable them to succeed academically". This supports the author's research that suggests learning styles are fluid in nature and can change over time (Dale and McCarthy, 2006).

Recent research has further acknowledged the different learning styles of students towards VLE engagement (Heaton-Shrestha et al., 2007). In addition, to the strategic approach as acknowledged by Dale and Lane (2007), Heaton-Shrestha et al., (2007) recognise that VLEs support a diversity of learning styles and these styles influence the way in which the VLE is used. The research also recognises the use of the different senses when engaging in learning using VLEs. The author's research acknowledges how VLEs are able to support a range of learning styles which can be challenging to meet in a traditional learning context, as noted by Dale and McCarthy (2006). However, it should be noted that studies on approaches to studying and the use of learning technologies reveal contrasting findings. Whereas some research has found no evidence of a strong association between approach to study and judgements about networked learning (Goodyear et al., 2003) others have found a strong association between deep and strategic approaches and students' perceptions of networked learning (Buckley et al., 2008).

The author's research revealed that students could adopt an instantaneous approach to learning. The bite-sized approach to knowledge consumption through podcasting where knowledge is pushed out to students, was recognised by Dale (2007) and Dale and Hassanien (2008). The research noted how this approach appears to influence student motivation for learning, which is consistent with the thoughts of others (Prensky, 2000; Oblinger and Oblinger, 2003). However, from the perspective of connectivism and navigationalism, the extent to which technologies have potentially driven this behaviour requires further research.

4.4.2 Differentiation

In acknowledging differences in learning styles and behaviours amongst students the framework proposes the development of differentiated learning techniques. Previous research has noted how differentiated techniques promote a student centered (Smeets and Mooij, 2001) and personalised (Scalise et al., 2007) learning environment. A differentiated approach, using technologies, has been argued to promote autonomous learning behaviour (Moorij, 2007b) and has the potential to keep track of, and monitor, differentiated materials and responses to them (Moorji, 2008). Indeed, recent research has found a positive correlation between differentiated blended computer based activities for supporting diverse learning styles (Leakey and Ranchoux, 2006; Moorij, 2007a). Though as Lane et al., (2006) noted, attempting to match differentiated activities to learning styles raises epistemological questions as to how this match should be made (Leakey and Ranchoux, 2006).

Engaging learners through a differentiated approach was discussed as part of Chapter Two in the author's research on iPod technologies and the use of MCQs in VLEs (Lane, Dale and Horrell, 2006). From radical behaviourist and constructivist perspectives, this research acknowledged the relationship between the use of differentiated and interactive learning materials and how this correlates to performance on a module. The author's research noted the effectiveness of this approach for developing independence and for promoting management of the student's own learning process (Lane et al., 2006). Particularly via the development of self-assessment skills that generate greater awareness of the subject matter (Lane et

al., 2006). Furthermore, the discussion has acknowledged the relationship between differentiated techniques and generating disequilibrium as part of the construction of meaning in the learning process. It also acknowledged the potential for developing active learning and the development of higher-order thinking skills. An observation which is consistent with previous research in the field (Smeets and Mooij, 2001). Though from a navigationalist perspective, learners have to develop the critical skills to be able to locate appropriate information and determine its value (Brown, 2006). In doing so, this approach positions the tutor as a facilitator of knowledge construction amongst students (Bullard, 2003, Sutherland et al., 2004).

4.5 Chapter Summary

The chapter has presented a pedagogical framework that draws together the author's body of research. The framework is underpinned with learning theories that act as the foundation for engaging learners. This is followed by the interconnection between different learning approaches and learning technologies in developing engagement. These aspects of the framework are contained within a tripartite structure that acknowledges the further interconnection between the institution, tutor and learner. The author's research has recognised these as pivotal in influencing the extent of engagement with learning. The following chapter will present a set of guidelines for each of them.

5.0 Chapter Five - Practical Guidelines for Learner Engagement

5.1 Introduction

The thesis has discussed the author's research within the context of learning theory, and presented a pedagogical framework, which draws together the different perspectives of the research. By continuing to draw upon the findings of the author's research, the following chapter will develop a number of practical guidelines for engaging the networked learner. These are guided by the learning theory that has underpinned the author's body of research. The guidelines are further grounded in the evaluation of the empirical evidence that has emerged from the author's research. The guidelines are structured around the tripartite structure of the framework (i.e. the institution, the tutor and the learner).

5.2 Institutional guidelines

The body of research has revealed the importance of institutional structures when supporting the use of learning technologies. Indeed, previous research has observed that institutional policies and top-down authority with clear directives are key drivers in motivating staff to adopt new technologies (Samarawickrema and Stacey, 2007). The author's research has also noted institutional factors that can impact upon learner engagement. This includes the traditional approach to teaching using generic modules (Dale and McCarthy, 2006), the monolithic approach to the development of VLEs (Dale and Lane, 2007), the maintenance of the technology (Lane et al., 2004; Dale and Lane, 2006), time for staff to use and be creative with the technology (Dale,

2008), bureaucratic structures that can impede creative learning (Dale, 2008) and the need for frameworks and models of engagement that promote the pedagogical use of technologies as part of a blended learning approach (Dale and Lane, 2004; Dale and Hassanien, 2008; Cooper et al., 2008). In light of the findings of the author's research, the following guidelines are proposed.

Firstly, contemporary learning theories including connectivism and navigationalism acknowledge that learning takes place as a process of the connections that are made outside of the "traditional" learning environment (Siemens, 2005; Brown, 2006). From a constructivist perspective, these connections can act as a basis for scaffolding a students learning towards their zone of proximal development (Jelfs et al., 2004). Learning strategies can facilitate and support the ability of the learner to make connections and navigate the knowledge. Though the tutor has to be sufficiently experienced in ensuring that students have the necessary skills to navigate this knowledge. Connections with interactive activities in VLEs such as MCQs (Lane et al., 2006) discussion forums (Dale and Lane, 2004) and the use of podcasting (Dale, 2007; Dale and Hassanien, 2008; Cooper et al., 2009) are examples of blended techniques that the author has used for scaffolding students learning.

The research though has highlighted a number of institutional factors surrounding engagement with VLEs. This includes the design principles of VLEs which Dale and Lane (2007) argue should move away from monolithic VLE systems and towards technologies that promote a "hybrid" approach. Recent research has supported this view, arguing that personalised learning systems would enable teachers to integrate technologies that they believe would support the learning of their students (Stiles,

2007; Severance et al., 2008). There is also the need for sufficient institutional support for the maintenance of the technology, so as not to lead to learner disengagement with the technologies when participating in online activities (Lane et al., 2004; Dale and Lane, 2006).

Dale and Pymm (2009) highlighted, that institutions should adapt to the flexibility that new technologies can bring to the learning environment. As discussed earlier, podcasting is based upon "push" technologies that empowers users to engage with knowledge as and when it occurs. Though other published research since, has noted the use of podcasts in both audio and video format (Copely, 2007), the author's research is innovative in that it has used an enhanced delivery approach to podcast learning content. This includes the use of audio, visual and web linked based material (Dale, 2007).

Whilst not arguing for a "one size fits all" approach, Dale (2007) and Dale and Hassainen's (2008) research argues that educational podcasts must be pedagogically sound and suggest that the development of educational podcasting needs to consider specific design and organisation issues, and guidance and resource issues. Indeed, a focus on pedagogical issues, in addition to media and IT training in podcasting, has been highlighted more recently as areas of high importance (Rosell-Aguilar, 2007; Copely, 2007). Strategies for using podcasting based around a combination of learning and technical issues goes someway to ameliorating this gap in knowledge (Dale 2007).

Secondly, the author's research, has confirmed that the adoption of technologies by

higher education staff takes a diffusion of innovations approach (Surry et al., 2005; Jackson et al., 2006; Samarawickrema and Stacey, 2007; Hansen, 2008). That is, staff adopt technologies at different rates over time. Some will be early adopters whereas others will be laggards in the adoption process (Rogers, 2003). Factors including workloads, the reconfiguration of learning materials, research demands, training, the learning of new work practices, professional exposure, intellectual property issues, policy issues and funding and staff attitudes can all influence the extent to which learning technologies are adopted (Samarawickrema and Stacey, 2007). Institutions should understand these factors when developing teaching and learning policies and strategies. When adopting learning technologies, Dale (2008) has noted how institutions need to develop cultures which are flexible to change and receptive to the development of a creative learning environment. The management of change is important, as the embedding of elearning practice in HE institutions can differ in terms of their organisational structures, culture and climate (White, 2007).

Thirdly, in acknowledging that staff and students adopt technologies at different rates, institutional structures are required that promote the effective resourcing of a blended approach, alongside traditional methods of delivery**.** This includes both human and time allocation considerations. From a constructivist perspective, interaction with qualified peers has the potential for the development of learning (Papastergiou, 2007). In terms of human resources, therefore, support teams could be used to assist staff in the development of blended materials. Such teams could work alongside tutors to enable them to gain confidence and know-how in the technology. Without proper support Hughes (2007:361) argues that this could be a "high-risk" approach. Graduate teaching assistants could also be used to assist both staff and students in the

development of blended activities using technologies.

The author's research has noted how time is a critical factor in enabling the effective use of learning technologies (Lane et al., 2006; Dale, 2008). Previous research has contended, that to continually meet the needs of students through constructivist approaches, the workloads of tutors may increase (Bullard, 2003). The utilisation of technologies can further compound this issue. Time should therefore be factored into staff workloads to enable the development of networked resources. Time should be given to technologically confident staff. These staff could then be assigned to inexperienced staff to raise their knowledge and confidence levels with the technology. Unwin (2007) supports this view, arguing that "ICT enthusiasts" can play a key role in the developmental process. The author's research has also noted the need to ensure the IT infrastructure is sufficient for the purposes of supporting learning technologies. In terms of both hardware and software this emerged as a key factor from the author's research where the rate of technological advancements can supersede institutional infrastructure (White, 2007).

5.3 Tutor guidelines

The author's research has illustrated how the emergence of new technologies requires an alternative approach to that of the traditional lecture style method to learning. Previous research has noted the importance of fostering engagement with technology through a means of setting achievable goals, developing an authentic learning experience, setting tasks at the appropriate complexity level and providing a degree of challenge that meets the ability of the learner (Schellens et al., 2007). The author's

research has further noted how the use of technologies, such as iPods, can promote a more creative learning environment (Dale, 2008). Though this enables tutors to employ an element of risk in their learning and teaching strategies (Dale, 2008). This can only take place if learners and teachers feel safe in taking risks (Cornu and Collins, 2004). Whilst acknowledging the diversity of student learning approaches, the following outlines a series of guidelines that tutors can follow in the development of their teaching and learning strategies.

Firstly, in confirming previous findings (French et al., 2007) the author's research has noted how lecturers need to have an understanding of what motivates and engages their students. This can be in contrast to adapting the instructional mode to the learning styles of students (French et al., 2007). The author's research has argued that lecturers need to be freed from a need to deliver information and move towards facilitating access to differentiated work in which students can gain feedback on information delivered in the lecture. In this way lecturers can allocate more time to working with students' use and understanding of information (Lane et al., 2006).

Secondly, the role of the tutor should move towards a "facilitator" of the learning process. This is consistent with a social constructivist perspective of learning (Hanson and Sinclair, 2008; Hunter, 2008). The author's research has demonstrated how the use of moderated discussion forums (Dale and Lane, 2004), MCQ tests (Lane et al., 2006) and podcasts (Dale and Hassanien, 2008, Cooper et al., 2009) can be used to facilitate engagement with further sources of learning. Online feedback in MCQ tests enables learners to understand the answer to a given question and can refer them to wider areas of reading to reinforce knowledge and further their understanding of the

subject matter. Through this process the transference of power is handed to the learner (Adams, 2006). Though, from a connectivist perspective the challenge for the lecturer is the management of chaos. This emerges from the multiple layers and networks that the student has the opportunity to interact with (Siemans, 2005).

The moderation of, and feedback to, students on discussion forum contributions can offer direction on consensus opinions as well as guiding students to other sources of reading (Dale and Lane, 2004). So as to promote authentic learning experiences, tutor feedback should make use of practical examples and issues that enable the student to structure their understanding of the problem (Richards, 2006). Enhanced podcasts that have the capability to embed weblinks can be used to direct students to areas of knowledge that supports their understanding of the subject (Dale, 2007; Dale and Hassanien, 2008). The use of learning technologies of this kind, requires tutors to adopt alternative skills from those, with which they are familiar (Condie and Livingston, 2007).

Thirdly, tutor skills would need to be developed to enable the effective use of the technologies (Delfino and Persico, 2007). Though tutors maybe conversant with offering written feedback, online and web based feedback requires skills which ensure students continued engagement (Deepwell and Malik, 2008). The author's research has noted how online feedback in discussion forums requires the assimilation and synthesis of online information and contributions made. This feedback often needs to be continuous and formative in nature (Dale and Lane, 2004). This level of engagement is important for developing a sense of connectedness and social presence amongst learners (Wheeler, 2007). The time taken to engage in online feedback to

students can also be resource intensive, though recent research has countered this claim and posited a number of benefits when using electronic feedback (Denton et al., 2008). The approach towards "coursecasting" as illustrated in the author's podcasting research (Dale, 2007; Dale and Hassanien, 2008; Cooper et al., 2009) also requires sufficient training and development. This includes media training alongside technical skills (Dale and Hassanien, 2008).

Fourthly, the research has noted how learners have become more receptive to a sensory learning experience that includes visual and audio modes of communication (Dale and Pymm, 2009). Recent research has also acknowledged the effectiveness of using visual and audio teaching materials for developing engagement amongst networked communities (Wong et al., 2008). The use of visual and audio stimuli has the potential to promote the construction of authentic sense making experiences (Kivinen and Ristela, 2003). The design of assessments should encourage students to develop outcomes that recognize a diversity of communication approaches including the use of audio and visual methods (Barnes and Tynan, 2007). The development of learner generated content in the form of podcasts, discussion forums, blogs and wikis have been acknowledged as a method for promoting student engagement with the subject matter (Lee et al., 2008; Dale and Povey, 2009). However, as the author's research has noted, these need to be developed in a structured way, where the outcome and value of the learning is well understood (Dale and Lane, 2006).

5.4 Learner guidelines

It is acknowledged that using technologies to support learning can be stressful for students and appropriate student support resources therefore require careful planning by tutors (Adams, 2004). Whilst students have acknowledged that the use of technologies should not be a replacement for taught lecture material (Cooper et al., 2009), the author's research has noted a number of factors that drive learner engagement. The body of research has revealed that learners are often driven instrumentally by the completion of assessment outcomes (Dale and Lane, 2007; Dale and Hassanien, 2008). The technologies are therefore used strategically to achieve these outcomes (Dale and Lane, 2007). An awareness of these factors therefore enables tutors to understand learner motivation towards using technologies. Guidelines are proposed, that acknowledge how students should understand the value of engagement with technologies, when supporting their learning.

Firstly, awareness of the technologies and how learners can use them effectively has been a key finding of the author's research (Dale and Lane, 2007; Dale and Hassanien, 2008). This confirms the findings of recent research which has identified that student's need clear guidance on using technologies as part of a blended approach (Deepwell and Malik, 2008). Initial guidance on using technologies such as VLEs and podcasting is important for learners to understand how to use them and what purpose they serve (Dale and Lane, 2007; Dale and Hassanien, 2008). This should be integrated into the student's induction, and formative assessment activities used as a basis for the reinforcement of learning (Fox, 2001; Sutherland et al., 2004). Engagement with the activities should be monitored and praised as this has found to

be an effective means for supporting learners (Lane et al., 2006; Dale and Lane, 2007). This will encourage students to understand the value of the technologies and develop their knowledge towards the summative assessment and the achievement of the learning outcomes (Nulden, 2001). This further ensures that students do not develop a culture of using the technologies in a minimalist manner (Dale, 2003; Dale and Lane, 2007).

Secondly, the author's research has acknowledged how learners need to develop skills that determine the credibility and value of information. From the perspective of navigationalism, the tutor develops the skills of students to effectively navigate through the wealth of knowledge that is available to them (Brown, 2006). This is a crucial skill for learners to adopt, as from a connectivist point of view, the ease in which knowledge is created and disseminated, has become prevalent (Siemens, 2005). Learning and teaching strategies are required that ensure learners develop the skills that can determine the relevancy and credibility of information (Brown, 2006; Moran, 2008). Strategies outlined in the author's research are methods, which could be adopted by tutors to facilitate this process (Dale and Lane, 2004; Lane et al., 2006; Dale, 2007).

Thirdly, from a constructivist perspective, learners should be encouraged to develop activities that promote the learning of other students. As the author's research has acknowledged, the student-teacher power relationship has evolved (Dale, 2008; Dale and Povey, 2009). A strategy could be, to enable students, as part of their assessments, to generate worksheets that will enable the assessment of students at lower levels. This empowers students to generate knowledge and take control of their

own learning, thus developing greater autonomy and independence (Ausburn, 2004). Such an approach can also facilitate a deeper approach to learning (Wilson and Fowler, 2005). If learners have a greater command of the technologies than tutors, then they should be encouraged to develop activities that enable them to achieve the learning outcomes of the module. Recent research by Lee et al., (2008) noted the positive benefits of using podcasting when promoting collaborative knowledge creation amongst peers. Learners are more likely to engage if they have been involved in the negotiation of meaning in learning (Seale, 2004).

Fourthly, the author's research, has found that learners do not differentiate between technological devices that are used for their leisure and learning (Dale, 2008). Strategies should be adopted that encourage the use of personal devices such as mobile phones, MP3 players and iPods. Using social technologies that mirror the experience of play could positively influence the delivery of the learning experience (Dale, 2008). The strategies discussed previously in the form of empowering learners via learner-generated content, can also promote creative engagement (Dale and Povey, 2009; Wilson, Andrews and Dale 2009). Indeed, Laurillard (2002) stresses the importance of "building in" interactivity between teacher and learner and between learners themselves. Social media technologies, such as podcasting can promote the development of networked communities and learner interaction (Cooper et al., 2009). Nevertheless, these technologies also create challenges for tutors, and as mentioned previously, require skills that ensure that learners are properly directed in their acquisition of knowledge and understanding (Brown, 2006; Moran, 2008).

5.5 Chapter Summary

The chapter has discussed practical guidelines for engaging the networked learner. These guidelines have emerged from the author's body of research and are further underpinned with learning theory. The following chapter will now offer some conclusions based upon the author's publications and suggest some future research directions.

6.0 Chapter Six – Conclusion

The thesis has presented the author's body of published research into learning and learning technologies. This research has led to the development of a pedagogical framework and a set of practical guidelines for engaging the networked learner. The overall aim for the thesis was to critically examine the theoretical and practical issues when engaging the networked learner**.** The following conclusion will reflect on this aim, whilst rearticulating the key findings and contribution to knowledge that the body of research has made. The conclusion is structured around the objectives outlined in the introduction to the thesis. This includes a summary of the theoretical, methodological and applied implications of the research. The discussion will also acknowledge some future directions for the research.

In the context of the thesis, learning theory has been used to guide the development of the individual research aims as outlined in the published works. The body of research acknowledges the underlying principles and application of key learning paradigms. This includes behaviourism (Lane, Dale and Horrell, 2006), cognitivism (Dale and McCarthy, 2006), constructivism and social constructivism (Dale and Lane, 2004; Dale and Lane, 2007; Dale, 2007; Dale and Hassanien, 2008; Cooper, Dale and Spencer, 2009; Dale and Pymm, 2009) and connectivism and navigationalism (Dale, 2007; Dale and Hassanien, 2008; Cooper, Dale and Spencer, 2009; Dale and Pymm, 2009). The author's research lends context to these paradigms whilst also demonstrating the contribution to knowledge that each of the papers has made. The intention of the discussion has not been to elevate one theoretical approach over another. The research is practice based and has drawn upon theory for supporting the

individual studies. However, the research has noted that these theories are not without their limitations.

Behaviourism and cognitivism take a positivist epistemology, and constructivism and social constructivism take an anti–realist perspective (Guba and Lincoln, 2005). However, the philosophical positioning of connectivism and navigationalism is less clear. As has already been discussed, within the context of connectivism, learning is defined as "actionable knowledge" (Siemens, 2005). This occupies the space between knowledge and the construction of meaning making on the knowledge. Both connectivism and navigationalism emphasise the externality of knowledge creation and amplification of learning is developed through the extension of the personal network (Siemens, 2005; Brown, 2006).

Both theories focus on the proliferation and chaos of knowledge. As the author's research has explored, this has been perpetuated through the process of learner-generated content (Dale and Pymm, 2009; Cooper, Dale and Spencer, 2009). In this respect, knowledge creation through empowering learners and the searching for meaning through discovery follows a constructivist epistemology. The notion of learning through non-human appliances, as connectivism and navigationalism, suggest could arguably be grounded in rationalist modes of operation. Though the process of information retrieval and networking may appear to be chaotic, the journey itself maybe more rational than Siemens and Brown actually acknowledge. From this perspective, connectivism and navigationalism potentially take a post-positivist ontology, where the journey to knowledge is based upon an incomplete understanding of reality (Tribe, 2008).

It has been acknowledged previously that theoretical paradigms that underpin learning with technologies are still at a relatively embryonic stage (Laurillard, 2002). It has been further argued that research into learning technologies should be grounded upon sound theoretical principles and frameworks, which can be challenging when the field is still emerging (Levy, 2006; Unwin, 2007). A pedagogical framework (Figure 1) is presented as a basis for understanding the author's contribution to knowledge. Philosophically, it is acknowledged that providing a framework that conveys a single belief counters a constructivist epistemology (Jonassen, 1999). Though, collectively, the author's body of research reflects a post-positivist perspective on reality.

In contesting traditional theories of learning, Moran (2006) contends that navigationalism offers educational institutions the opportunity to be unconstrained from primarily delivering content, and can "become places where practical wisdom is used to promote engagement with both virtual and real sources of knowledge" (Moran, 2006, p.220). However, recent research has observed that the commoditization of teaching in podcasted format does not equate to learning (Middleton, 2009). Furthermore, when scaffolding learning using technologies such as discussion forums, Maltby and Mackie (2009) contend that tutor intervention could potentially result in surface learning through greater learner dependency. It should also not be assumed that learners feel empowered to develop networks, generate knowledge and construct meaning from this knowledge (Karagiorgi and Symeou, 2005). As the author's research suggests, alternative modes of knowledge dissemination is conducive for different approaches to learning (Dale and McCarthy, 2006).

Teaching is argued to be about bridging the gap between the state of mind of the learner and the subject matter, which is to be learnt (Pring, 2004). Though the traditional lecture approach is the most efficient method of disseminating knowledge to large groups of students (Bach et al., 2007), the author's research has demonstrated how technologies, such as VLEs and iPod technologies, can be used alongside traditional approaches in bridging the gap and engaging learners. This confirms the thoughts of others that technologies should operate in tandem, rather than side by side, with traditional lecture dissemination (Toole and Absalom, 2003). In this context the research has also confirmed the changing identity of the teacher and learner (Maidment, 2005). The research has noted the evolving tutor role towards facilitating knowledge enquiry (Brown, 2006). The research has revealed how opportunities for the generation and interrogation of knowledge can comprise podcasting and VLE driven MCQs and discussion forums (Dale and Lane, 2004; Dale, Lane and Horrell, 2006; Dale and Hassanien, 2008; Dale and Pymm, 2009; Cooper, Dale and Spencer, 2009).

The research lends evidence to arguments that suggest the rewiring of cognition through the use of technology (Prensky, 2000; Siemens, 2005). Though different learning approaches to using the technologies were evident, the actual use of technologies per se suggested raised levels of self-esteem and motivation (Dale and Pymm, 2009; Cooper, Dale and Spencer, 2009). These advantages have been noted previously when adopting learning technology methods and approaches (Laurillard, 2002). However, it is acknowledged that these factors enable learning and are not necessarily about the act of learning itself (Siemens, 2006). As has been discussed, the absence of social cues can exacerbate the limitations of learning with digital

technologies (Schweizer et al., 2003; Dron et al., 2004). In addition, digital technologies have been noted for being effective in developing communities already formed but less so for making them (Seely Brown and Duguid, 2000).

The research has confirmed the observations of others on the "disruptive" nature of learning technologies (Christensen and Raynor, 2003; Berry, 2006). The research revealed how iPod technologies enable the "pushing out" of knowledge to students (Dale, 2007) engendering greater flexibility (Dale and Pymm, 2009; Cooper, Dale and Spencer, 2009; Dale and Hassanien, 2008) and creativity (Dale, 2008) in the learning experience. However, the research also acknowledged how creativity can be stifled by institutional systems and structures (Dale, 2008). The research observed how institutional structures in HE have the potential to develop a learning behaviour, which is geared towards the achievement of assessment outcomes (Dale and Lane, 2007). This has led to instrumentalist styles of learning, which can then be a key driver for student use of technologies (Dale and Lane, 2007; Heaton-Shrestha et al., 2007).

The author's research has confirmed previous arguments that the use of technologies can actually exploit weaknesses in institutional systems and structures (Allen, 2003). The research has found that institutional frameworks, in terms of IT structures and training and development are important for supporting learning technologies (Dale and Lane, 2004; Dale and Lane, 2007; Dale, 2007; Dale, 2009; Dale and Hassanien, 2008; Cooper, Dale and Spencer, 2009). Previous research has acknowledged that tutors will be more receptive to adopting alternative approaches to learning and teaching if they believe these will be effectively supported (Condie and Livingston,

2007). The research has also confirmed how the construction of meaning is a mobile and multi-sensory experience (Dale and Pymm, 2009; Kukulska-Hulme and Traxler, 2005). Though in contrast to other findings (Lee and Chan, 2007) the research has noted the blurring of boundaries between work, play and learning using technologies such as iPods (Dale and Pymm, 2009; Cooper, Dale and Spencer, 2009).

Some collective areas for future research have been noted from the published works. It is acknowledged that the discussion of the research is based within a delimited period. The framework and supporting guidelines are an outcome of the findings of the author's research during this time. The research has predominately been contextualised within the leisure, tourism, hospitality, sport and performing arts subject areas. Though some generalisations can be made, it should be acknowledged that arguments are limited to the context of students researched within the published body of works. The research has noted that students are not homogenous and therefore some caution needs to be raised in applying the findings to learners studying in other subject domains and who might have limited technology related skills (Selwyn, 2008).

Though the research found no discerning differences amongst students across age, gender and nationality some caution should still be raised in generalising the research. This is particularly the case when exploring learning approaches and behaviours, which have been found to differ across cultures (Yip, 2007). In this respect, further research should be conducted with a wider cross-section of programmes and institutions (Dale and McCarthy, 2006; Dale and Hassanien, 2008; Cooper et al., 2009). Further research should also embrace a wider sample of participants in HE

including administrators, support services, external examiners, professional bodies and so on (Dale and Lane, 2007; Dale and Hassanien, 2008).

The research is limited by the rate in which technology progresses, and can become obsolete (Stiles, 2007). It should be noted that the body of research has evolved as technological developments and learning have taken place. It is acknowledged that some technologies such as VLEs have been designed for the purposes of supporting learning. Other technologies have emerged where the primary function is perceived as leisure (i.e. iPod technologies). The body of work has noted this blurring when devices are used for both leisure and learning and further research is required in this area. Further research into the learning approaches to using technologies should also be conducted (Dale and Lane, 2007; Dale and Hassanien, 2008; Cooper, Dale and Spencer, 2009). Longitudinal research would also ascertain the extent to which learning behaviours develop throughout the duration of a student's studies and their use of technologies (Dale and McCarthy, 2006). It would also ascertain the extent to which novelty is influential in the perceptions of using different technologies for learning (Dale, 2008).

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