E-Learning through a magnifying glass: Exploring experiences of Students and Teachers in Higher Education

Makrukh Mirza

DEDICATION

I dedicate this thesis to my parents,

Prof. Nafees Baig

And

Mrs. Naushaba Baig

THESIS CONTAINS CD

ACKNOWLEDGMENTS

I would like to acknowledge a number of people who one way or the other contributed to the success of this work.

In the first place I would like to thank my supervisor Dr. Giuseppe Cannavina for his supervision, advice, and guidance from the very early stage of this research as well as for giving me unconditional encouragement and support through out the work. I am also grateful to him for his moral support on a personal level without which this journey may never have been completed.

I would also like to record my gratitude to my second supervisor Dr. Christopher Stokes for constant encouragement, support, and invaluable suggestions. He has been everything that one could want in a supervisor. I am deeply indebted to him for his time and effort in reviewing my work, reading my thesis and giving critical and valuable comments on it.

Thank you Joe and Chris, I could not have asked for two better, more knowledgeable, more friendly and supportive supervisors.

Many thanks to Dr. Hani Sewilam and Prof. Heribert Nacken for the stimulating discussion and interview we had in Aachen, Germany. I am very grateful to them and their team for their willingness to share their bright ideas and eSWES project reports with me, which was very fruitful for shaping up my ideas and research.

I would also like to express my gratitude to Mr. Ken Marks and Prof. John Scaife (Dept. of Education, University of Sheffield) for sharing their expertise and giving me valuable research insight. Their thoughtful advice gave me a sense of direction during the initial years of my PhD studies.

My deep love and appreciation goes to my family. My parents, for giving me solid roots and accepting and helping me to realise my dreams. My brothers, for believing in me and giving me the necessary strength to hold on and persevere. Their love and support still sustain me today!

Words fail to express my appreciation to my husband whose dedication, love and persistent confidence in me, has taken the load off my shoulder. I gratefully acknowledge him for his constant advice and discussions to nourish and trigger the philosophical side of me. His passion for philosophy inspires and enriches my growth as a researcher. I am indebted to him more than he knows.

In the end, I would like to thank my friends and everybody else who helped me at different occasions and in one way or the other influenced this thesis. Last, but not the least, a special acknowledgement must go to all those who helped me with data collection for the study.

I expand my thanks to all the staff in our university for their assistance and kindness.

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SUMMARY

The literature reveals a gap between expectations and outcomes of e-learning and the need to develop a technologically and pedagogically effective e-learning environment. The literature suggested that making the shift from a Behaviorist to Constructivist approach could narrow this gap. Therefore, the aim of the study was to investigate and determine if the shift from teacher-led (behaviourist) approach to learner-centred approach (constructivist) could help in reducing the gap between expectations and outcomes of e-learning. The focus of the research was on the roles of information and computer technology in improving the quality of teaching and learning, and on looking to future possibilities and challenges to facilitate the development of pedagogically effective e-learning environment. In order to achieve the aim, the primary objective was to examine and evaluate learners' and teachers' experiences of e-learning and how e-learning has impacted on their expectations and what needs to be improved if they are to meet these new expectations.

The study identified motivators and barriers to e-learning for teachers and learners and recommended measures that might be taken to remove or lessen the impact of such identified barriers. The study found that the online environment clearly has the capability to propagate the constructivist approach by encouraging learner controlled, critically reflected and deeper learning but also found that many students still preferred the behaviourist approach to learning (direct instructions) and that the preferences for the level of learner-control may also vary from culture to culture (Western culture may emphasise learners' control over their environment while eastern cultures may emphasise teachers' control). Therefore, constructivism may not be suitable to all subjects and all students. The study concluded that placing a greater value on teachers as the knowledge expert and on objectivism of knowledge (Behaviourism) or placing a greater value on learners as independent and constructive learners (Constructivism) creates a bias in either direction and results in unsatisfied learners and teachers. It was established that it is important to tip the balance equally between teachers and learners rather than making it completely student-centred or completely teacher-led approach. The researcher coins it as 'teacher-learner balanced' approach.

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Chapter 1 – Introduction

CHAPTER 1 – INTRODUCTION

1.1 Background: The Good, the Bad and the Solution

Expectations of E-learning: The Good

"The next big killer application for the Internet is going to be education. Education over the Internet is going to be so big it is going to make e-mail look like a rounding error"
(Chambers, CEO of Cisco Systems 1996)

E-learning is not new and the growing trend towards online education is something that we cannot ignore. In the last decade universities and organisations have realised the increasing impact of new and cutting edge information and communication technology. We are currently seeing a shift in teaching and learning models across the spectrum of higher education; a transition between the ages of print to the age of digital electronics. This is partly in response to the increase in student numbers (Classes are outgrowing lecture theatres, Seminar groups are getting bigger, there are more part time and overseas students) and external pressures from government. It is also partly in response to a growing need for graduates to emerge from University with transferable skills, such as the ability to give presentations, solve problems, work independently and collaboratively as appropriate, and to use the computer as a tool, as a resource and as a means of communication.

The U.K Government is encouraging the Universities to incorporate flexible learning modes, which includes e-learning. The European Union has similar aims of incorporating greater student and lecturer mobility and to make the communication better through networks, and wishes to standardise education through the Bologna declaration. The Bologna declaration (1999) represents a commitment by forty-five European countries to undertake a series of reforms in order to achieve greater consistency and portability across their higher education systems. This declaration is most likely to have a profound effect on the development of higher education globally. Since the future of the education itself is connected to the development of Information and Communication Technologies, there is a strong need to address the issue of e-learning in the Bologna Process (The European Students Forum, AEGEE).

The study "Virtual Models of European Universities" (European Commission 2004)

indicated that a large increase in the number of courses offered in e-learning format could be expected in the future. Sixty five percent of the more than 200 responding universities in this survey (European Commission 2004) stated that this would be one of their key priorities over the next couple of years. There is no doubt that there has been a rapid growth in distance and online education in the last decade. Many courses taught in a traditional face-to-face format are incorporating one or more elements of online education, including the use of email, bulletin boards, chat rooms, virtual office hours, and online availability of course materials such as slides and links to tutorials which can be termed as blended learning (Hislop & Atwood, 2000). This trend towards the increased use of online technology is likely to continue in the future. Peter Drucker (social ecologist - widely considered to be the father of "modern management") was paraphrased as saying that it is necessary for the traditional university to change its strategy, as distance learning is not a passing trend (Chan & Welebir, 2003). Peter Drucker believes that the virtual classroom will eventually replace the traditional classroom (Gibson, 2001). The future of educational technology is calling for renewing traditional instructional models (Hamel and Ryan-Jones, 2002). Collis and Mooned (2001) also indicated that changes in technology increasingly have affected higher education to a large extent where universities are rapidly embracing new and experimental modes of teaching and learning. "*E-learning is thought to provide students with appropriate environments capable of supporting not only the acquisition of subject matter specific knowledge, but also transferable skills such online communication, online discussion, information searching and negotiation of meaning*" (Nunes and McPherson, 2002).

Outcomes of E-learning: The Bad

In spite of all these pressures and encouragement, e-learning is not being able to deliver effectively. The e-Learning market has a growth rate of 35.6% (Sun *et al*, 2006), but failures exist (Arbaugh & Duray, 2002; Wu *et al*., 2006). One big example of such a failure is the UK e-University (UKeU), which was scrapped in 2004, having attracted only 900 students - the initial target being 5,600. It was borne on a wave of e-enthusiasm, which predicted that traditional university education would be swept aside to be replaced by pure online learning (Wilcox *et al*, 2005). Little is known about why some users stop their online learning after their initial experience (Sun *et al*, 2006). In

spite of early hopes that there would be rapid change of the systems, enabled by technology, the truth is that this has not occurred (Danish, 2004). Technologies are slowly being adopted within existing higher education institutions in Europe (Nichol & Watson, 2003; Reynolds, Treharne & Tripp, 2003; Selwyn, 2003). The systems are changing, very slowly, and in the process some technologies are being adopted within the systems although not necessarily within learning processes. A study carried out by Collis and Wende (2002) concludes that "*whilst change is indeed slow, nevertheless institutions are gradually stretching the mould although changes..are gradual and usually slow*". This is also because many universities lack the right kind of management vigour, style, knowledge, and experience required in handling more developed innovative technologies. "*In addition, there is understandable concern that rapid and widespread adoption of technological approaches could fail as a consequence of the inability of many teaching staff to adapt their teaching to suit a technological environment*" (Saunders and Klemming, 2003). Much of the early use of the Internet and Information and Communication Technology in teaching has been to automate the existing features like reproduction of the lecture notes on a website or taking a multiple choice questions test online. Even today, most of the online courses are labour-intensive and highly text based. Initial research exploring the potential of online learning has provided some overall insights (Conrad, 2002; Hartley & Bendixen, 2001; Hill, 2002). For example, some sources indicate that online learning enables institutions to reach new learners at a distance, increases convenience, and expands educational opportunities (Hara & Kling, 1999, 2001; Hill, 2002; Hofmann, 2002; Rourke, 2001; Schrum, 2000). Yet, the movement toward online learning is not grounded in compelling empirical evidence that it is effective and/or beneficial for learning (Hannafin *et al* 2003; Song at al 2004). This is partly because there is no evidence that in the majority of institutions, anything other than standard everyday ICT applications – spreadsheets, email, word processing, PowerPoint and accessing texts or pictures from the Internet are being deployed which in small terms can be termed as e-publishing rather than e-learning (Alan,1994). "*Many e-learning courses continue to use print and video rather than make extensive use of the available digital technologies*" (HEFCE 2003). Jones *et al* (2004) have stated "*The proliferation of e-Learning programmes on offer within the UK raises critical issues that have yet to be fully addressed in terms of the nature of e-learning, effective pedagogy and learner expectations.*" This is true as the current learning

management systems and Virtual Leaning Environments are not being able to meet expectations (Lynch, 2002; Moore & Aspden, 2004).

Bridging the Gap: The Solution

The development of technologically and pedagogically effective e-learning environment is needed to narrow down this gap between the expectations and outcomes of e-learning. The gap between the bodies of knowledge related to learning theories, instruction design principles and student learning in higher education also needs to be narrowed down (Siragusa and Dixon, 2005). The pedagogy based on behavioral theories is no longer accommodating the changes in information literacy teaching's focus. Academic staff and instructional designers need to rethink pedagogies in teaching to meet the new challenges and develop critical thinking and lifelong learning skills (Wang, 2007). Ally (2004) argued that in order to promote higher-order thinking through technology-based learning environments, instructional strategies which promote learners to make connections with new information to old, acquire meaningful knowledge, and employ meta-cognitive thinking skills are required within the e-learning environment (a true constructivist notion!). The literature (Brown, 2003; Huba and Freed, 2000; Wang, 2006; Smith and Kolosick, 1996; Pillay, 2002; Weimer, 2002) suggests that making the shift from **teacher-led approach** (Behaviorist) to **student-centered approach** (Constructivist) can narrow this gap in expectations and outcomes in e-learning. This shift demands the concurrent development of innovative pedagogical practices and orientation for instructional science (Tenenbaum *et al*, 2001). The constructivist notion of learning suggests that both instructor and students have a stake in learning (Bangert, 2005). Therefore, this shift also demands a proper investigation into the teachers' and learners' experiences with e-learning as they are equal stakeholders in the overall development, implementation and evaluation of e-learning.

The constant growth of the Web influences and changes how online courses are designed and implemented. This, in turn, may also change the **learners' perceptions of their online experience**. Personal attitudes are a major factor to affect individual usage of information technology (Liaw, 2006). Therefore, continued studies of

learners' perspectives of online learning environments are needed in order to build more effective instructional strategies that can optimise the learning experience within this new era of education. Online education has opened the way for educators to reach learners "beyond bricks and mortar" campuses (McIsaac, 2002), including many people who would otherwise not have access to higher education. With the growth of globalisation, the students enrolling in e-learning programs have become increasingly diverse with respect to culture (Edmundson, 2007). Edmundson (2007) says in his book 'Globalised E-Learning Cultural Challenges', "*Given the increasingly heterogeneous nature of group of learners on online education, we must give much more consideration to how we can accommodate learners from different cultural backgrounds*". In order to realise the aim of e-learning as an educational tool, it is essential to accommodate the learning needs of different cultures in order to promote equitable learning outcomes for targeted students (Henning, 2003; Selinger, 2004; Dede, 200). Although few would disagree, that cultural factors are important in theory, there is surprisingly little research-based studies on cultural aspects of online leaning and teaching (Gunawardena, Wilson & Nolla, 2003). Ignoring cultural factors inevitably leads to frustrating and ultimately ineffective learning experiences (Dunn and Marinetti, 2002). Therefore, we need more cross-cultural research to understand and compare the differences in online learning across different cultures.

As stated earlier, along with Learners, Teachers are also equal stakeholders in the overall development, implementation and evaluation of e-learning. Teachers' abilities to teach online is critical to the quality of online education (Kyong and Curtis, 2006). The beliefs of University teachers can profitably be viewed as part of 'belief systems' (Rokeach 1970; Combs 1982). The relationship between teacher beliefs and practises have never been a clear one, it is reasonable to assume that those who see their role in one way are likely to differ in their practises from colleagues who view their role in some other way. Teacher beliefs heavily influence what is possible or appropriate within particular circumstances and therefore can have a significant impact on the relative success of innovation in traditional setting (Lockwood and Gooley, 2001). Recent studies have shown that the successful implementation of IT and e-learning technologies depends largely on the attitudes of teachers, who eventually determine how they are used in the classroom. Brock (1987) and Dillon (1989) noted that the lack of faculty participation has been a barrier to the growth of e-learning in higher education. "*While some faculty members have developed skills and abilities for*

teaching online, the majority require specialised training to become comfortable" (Willis, 1992). There are few studies on instructional support for faculty members and many questions remain unanswered, particularly from the teacher's perspective. Whitworth (2005) mentions that each stakeholder group brings to the development process (of a technological product, say a VLE) a certain culture, filled with assumptions, values, prior experiences, calculations of costs and benefits. Therefore, each will have different ideas about what will constitute the 'success' or 'failure' of an innovation.

Therefore, this research, ***first***, investigates teachers' experiences, attitudes and perceptions towards e-learning technologies, identifies critical factors that motivate or inhibit the teachers to incorporate these upcoming technologies into their teaching strategies within higher education and evaluates the impact of these technologies on their expectations and what needs to be improved if they are to meet these new expectations; ***second***, it explores learners' perception of e-learning identifying barriers and motivators of e-learning, tries to determine if the perceptions of e-learning differ for international students and home students and also investigates if e-learning can be used to overcome the cultural barriers in a multi-cultural educational classroom based setting; and ***finally***, it examines and recommends ways to improve the educative efficiency of the current e-learning environments from the viewpoint of both learners and teachers.

1.2 Aims and Objectives

The aim of this research is to investigate and determine if the shift from teacher-led (behaviourist) approach to learner-centred approach (constructivist) may help in reducing the gap between expectations and outcomes of e-learning. The focus of the research is on the roles of information and communication technology in improving the quality of teaching and learning, and on looking to future possibilities and challenges to facilitate the development of pedagogically effective e-learning environment. In order to achieve the aim of the research; the following research objectives have been identified:

1. To explore the experiences (with E-learning) of the 2 stakeholder groups, namely, Teachers and Students

- What is their most preferred mode of teaching and learning (traditional classroom based learning, purely online learning or blended learning)?
- How can the educative efficacy of the E-learning environment be enhanced?

2. To identify the motivators and barriers to E-learning for teachers and learners
3. To identify and recommend measures that might be taken to remove or lessen the impact of such identified barriers
4. To investigate if e-learning can be used to overcome the cultural barriers in a multi-cultural educational classroom setting

Chapter 2 - Literature Review

CHAPTER 2 – LITERATURE REVIEW

"Education has produced a vast population able to read but unable to distinguish what is worth reading"- G. M. Trevelyan, British historian (1876 - 1962)

2.1 Learning Theories

Not only has man wanted to learn, but, often his curiosity has impelled him to try to learn how he learns (Bigge, 1971). Since the seventeenth century many learning theories have emerged to challenge the existing theories. Since the late 1800s, three learning schools have influenced education: Behaviourism, Cognitivism and Constructivism. They represent major themes in the way learning is conceptualised and provide different practical guides for instructional practise. The review that follows focuses on literature related to these three major learning schools/theories and their implication on education.

2.1.1 Behaviourism

Some key players in the development of the behaviourist theory were Pavlov, Watson, Thorndike and Skinner. Classical Conditioning also known as Pavlovian conditioning was first demonstrated by Ivan Pavlov. The typical procedure for inducing classical conditioning involves presentations of a neutral stimulus along with a stimulus of some significance. **Pavlov,** a Russian physiologist, is frequently associated with the famous experiment involving food, a dog and a bell. Before conditioning, ringing the bell caused no response from the dog. During conditioning, the bell was rung a few seconds before the dog was presented with food. After conditioning, the ringing of the bell alone produced salivation (Dembo, 1994).

Thorndike's laws were also based on the stimulus-response hypothesis. He believed that a neural bond would be established between the stimulus and response when the response was positive. Learning takes place when the bonds are formed into patterns of behavior (Saettler, 1990). His theory is known as S-R bond theory or connectionism, but it too, in the broad sense of the term, was "behavioristic". Thorndike believed that the principal way in which S-R connections were formed was through random trial and error. He is famous for his experiment on cats (a typical trial and error experiment) in which he placed a "hungry cat" in a cage that could be opened from inside only by

striking a latch/rope. The cat would claw, bite and do everything possible to get out of the cage and accidentally touch the latch/rope and be freed. He also observed that the total time for the cat to get out would decrease while repeating the experiment with the same cat over and over again. Thorndike concluded that the cats did not think about how to escape and then do it; instead, they engaged in trial and error behaviour. He inferred that learning was a process of "stamping in" connections in the nervous system and had nothing to do with insight.

Watson (Watson, 1924) defined learning as a sequence of stimulus and response actions in observable cause and effect relationships. He was the first person to carry forward the work of Pavlov. He is also known as the father of behaviourism (He coined the term behaviourism as well). Watson carried out the famous 'Little Albert' experiment. A young boy named Albert was shown a white rat. Watson created a sudden loud noise whenever Albert tried to touch the rat (which obviously scared him). Soon he began associating the loud noise with the rat and developed a fear of rats. His work did demonstrate the role of conditioning in the development of emotional responses to certain stimuli. Conditioning means changing a response habit. It is achieved either by stimulus substitution or by response strengthening or modification (following a response by stimulus which either strengthens or changes it) (Bigge, 1971).

B.F. **Skinner** (Skinner, 1968) expanded on the works of Pavlov, Thorndike and Watson. According to Skinner, voluntary or automatic behaviour is either strengthened or weakened by the immediate presence of reinforcement. Reinforcement means that the probability of the repetition of certain classes of responses is increased. He is known for the principle of operant conditioning, which says that learning occurs as a result of positive reinforcement, and old patterns are abandoned as a result of negative reinforcement (Belkin and Gray, 1977).

Behaviourism and learning: Behaviourists conceptualise learning as a process of forming connections between stimuli and responses (Watson, 1924). "*The theory of behaviourism concentrates on the study of behaviours that can be observed and measured*" (Good & Brophy, 1990). It views the mind as a 'black box' in the sense that response to stimulus can be observed quantitatively, totally ignoring the possibility of thought processes occurring in the mind (Mergel, 1998). Motivation to learn in such a case is assumed to be driven primarily by drives, such as hunger, and the

availability of external forces, such as rewards and punishments (Thorndike, 1913; Skinner, 1950 cited in Bransford *et al*, 2000). Behavioural theories focus on *directed instruction* whereby a teacher transmits the knowledge to students in a well-organised manner.

The behaviourist learning theory assumes that the goal of learning is to efficiently transmit knowledge from the instructor to the learners (Skinner, 1976). Behaviourism as a teaching approach is often referred to as directed instruction. In such a setting, instructors are clearly central to learning activities. The behaviourist model is often criticised for stimulating surface learning and knowledge reproduction and for being too teacher centred. However, behaviourist learning is sometimes suitable for novice learners, as they need transferable knowledge from the instructor (More, 2007).

Instructional design underpinned by behaviourist approaches has been aimed at objectivity of instructional processes and the certainty of the "truthfulness" of the outcomes of the teaching–learning process. In emphasising the role of feedback and reinforcement, stimulus control is believed to shape, alter, and augment the students' learning outcomes. Instructional design in that context is aimed at providing extrinsic rewards so that learners' behaviours could be, to a large extent, controlled, directed and evaluated against external standards (i.e. goals and objectives) (Tenebaum *et al*, 2001).

2.1.2 Cognitivism

In the early 1920's people began to find limitations in the behaviorist approach to understanding learning. A limitation of early behaviourism stemmed from its focus on observable stimulus conditions and the behaviours associated with those conditions (Bransford *et al*, 2000). Their theories focused on changes in observable behavior and ignored any mental processing (Mergel, 1998). This orientation made it difficult to study such phenomena as understanding, reasoning, and thinking – phenomena that are of paramount importance for education. In the late 1950's, the complexity of understanding humans and their environments became increasingly apparent, and a new field emerged – cognitive science (Bransford *et al*, 2000). While the behavioural perspective has an external focus, the cognitive has an internal one. Learning is understood as a change in knowledge stored in memory.

2.1.3 Constructivism

"The basic distinction between behaviourist, cognitivist and constructivist theories is that while behaviourists view knowledge as an automatic reaction to external factors in the environment, and the cognitivist considers knowledge as abstract representations in one's mind, the constructivist school views knowledge as a meaning built by each learner through a learning process." (Baruque and Rio, 2004)

An emphasis on understanding leads to one of the primary characteristics of the new science of learning: its focus on the processes of knowing (**Piaget, 1978; Vygotsky, 1978** cited in Bransford *et al*, 2000). We learn from experiencing phenomena (objects, events, activities, processes) interpreting those experiences based on what we already know, reasoning about them, and reflecting on the experiences and the reasoning. Jerome Bruner (1990) called this process "meaning-making". Meaning making is at the heart of the philosophy of constructivism. The claims, which together are held to define constructivist views of learning, are listed below (Fox, 2001):

(1) Learning is an active process.

(2) Knowledge is constructed, rather than innate, or passively absorbed.

(3) Knowledge is invented not discovered. Constructivist writers do not always explicitly state this claim, but it lies at the very heart of their rejection of empiricist and 'positivist ' conceptions of learning (Fox, 2001).

(4) All knowledge is socially constructed.

(5) Learning is essentially a process of making sense of the world.

(6) Effective learning requires meaningful, open-ended, challenging problems for the learner to solve.

In Doolittle and Camp (2002), constructivism is described as a continuum and is classified in three broad categories: Cognitive, Radical and Social.

Cognitive constructivism (greatly influenced by the later work of Jean Piaget) focuses on the construction of the mental structures that function effectively within a reality that is already known (Baruque and Rio, 2004). Cognitive constructivism focuses on students

as individuals who "*construct their own knowledge as they engage in the process of interpreting and making sense of their classroom experience*" (Nuthall, 1997). It acknowledges that new knowledge is always constructed and built on previous knowledge. This is a learner-centred approach, where the teacher aims to elicit and understand what previous knowledge each individual has and helps him or her construct new knowledge on top of it. However, cognitive constructivism has been criticised for being too closely focused on the individual and ignoring the social and cultural context of learning (Nuthall, 1997).

Radical constructivism focuses on the student's personal understanding and the mental model he or she creates for the problem solving process (Doolittle & Camp, 1999).

And **social constructivism** (greatly influenced by the work of Lev Vygotsky) focuses on the effects of social interaction, language and culture on learning (Woo & Reeves, 2007). Vygotsky argued that all cognitive functions originate in social interactions and that learning is not simply the assimilation and accommodation of new knowledge by learners, it is the process by which the learners are integrated into a knowledge community. Therefore, learning is derived from rich conversation with other people who have similar or different perspectives based on their life experiences (Jonassen, 1999). Social constructivism also takes a learner-centred approach. Rather than viewing individuals, socio-cultural theories take greater account of the important roles that social relations, community and culture play in cognition and learning. Vygotsky (1978) states learning "*appears twice: first on the social level, and later, on the individual level*".

Since the 1990's, constructivism has exerted a strong influence on education in general and the Instructional Technology field in particular. Constructivism in education can be seen as a recent branch of the cognitive sciences (Terwel, 1999). The constructivist movement in recent cognitive psychology has reemphasized the active role student's play in acquiring knowledge and the social construction of knowledge has been an important principle in socio cultural theory (Vygotsky 1978, Wertsch 1985 cited in Terwel, 1999). "*Humans come to formal education with a range of prior knowledge, skills, beliefs, and concepts that significantly influence what they notice about the environment and how they organize and interpret it. This, in turn, affects their abilities to remember, reason, solve problems, and acquire new knowledge*" (Bransford *et al*, 2000). "*Constructivists believe that learners construct their own reality or at least*

interpret it based upon their perceptions of experiences, so an individual's knowledge is a function of one's prior experiences, mental structures, and beliefs that are used to interpret objects and events" (Mergel, 1998). Modern technologies in the field of education such multimedia-technologies, online facilities, Virtual learning Environments and the World Wide Web provide students with access to a lot of information which they can select and interpret and enhance their 'discovery learning' which is a part of constructivist learning environment. "*Discovery learning takes place most notably in problem solving situations where the learner draws on his own experience and prior knowledge to discover the truths that are to be learned*" (Clark, 1999).

A common misconception pointed out by Bransford *et al* (2000) regarding "constructivist" theories of knowing (that existing knowledge is used to build new knowledge) is that teachers should never tell students anything directly but, instead, should always allow them to construct knowledge for themselves. This perspective confuses a theory of pedagogy (teaching) with a theory of knowing. Constructivists assume that all knowledge is constructed from previous knowledge, irrespective of how one is taught (e.g., Cobb, 1994).

2.2 E-Learning

"*E-learning is not new: it has been around in some form or other for the past ten years. However, interest in e-learning is rapidly growing*" (Pollard and Hillage, 2001). The literature related to online learning has expanded considerably in the last 10 years. The review that follows focuses on literature related to e-learning and its strengths and potential drawbacks.

2.2.1 E-Learning Defined

Different people mean different things by the term 'e-learning'. Some see the concept quite narrowly, others more broadly. It is important to identify for the purpose of this dissertation the various definitions of e-learning used today.

Elliott Masie, at the e-Learning Europe Conference, July 2000, defined e-learning, "*as the use of network technology to design, deliver, select, administer, support and extend learning.*"

Besley (2003) in his paper "Towards a Unified E-Learning Strategy" defines it as "*learning in a way that uses information and communication technologies.... from a preschool child playing an interactive game... to a nurse taking her driving theory test online with a reading aid to help her dyslexia.*"

E-learning researchers at the National Centre for Supercomputing Applications (Wentling *et al*, 2000) define e-learning as the acquisition and use of knowledge distributed and facilitated primarily by electronic means. This form of learning currently depends on networks and computers but will likely evolve into systems consisting of a variety of channels (e.g., wireless, satellite), and technologies (e.g. cellular phones, PDA's) as they are developed and adopted.

A useful introduction to the various terms used in e-learning is provided by Urdan and Weggen (2000) and they define e-learning as the "*delivery of learning materials, packages or opportunities (i.e. content) through various forms of electronic media, including the Internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV, and CD-ROM.*" They use e-learning synonymously with technology-based learning.

Some authors (Hartsough and Wilson, 2003; Urdan and Weggen, 2000) see e-learning as a subset of distance learning, as distance learning would include all elements of e-learning *plus* text-based and correspondence-based learning or courses. However, they see online learning (or web based learning) as only one element of e-learning, describing only the Internet, intranet or extranet elements of e-learning. Therefore, online learning is set within e-learning, which in turn is set within distance learning (see **Figure 1**).

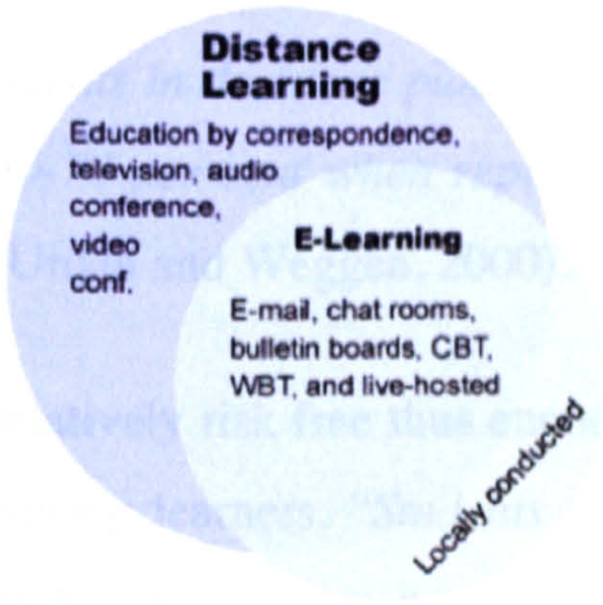

Figure 1 - E-Learning Realm (Hartsough and Wilson, 2003)

2.2.2 Benefits of e-Learning

There is little doubt about the growing importance of e-learning in education as research shows that it can have positive influence on student learning (Devitt and Palmer, 1999). A few benefits of e-learning are given below:

1. Accessibility - One of the main and most often cited benefits of e-learning, is its flexibility, *i.e.*, e-learning provides "*a learning experience which can be accessed at the most convenient time, can be provided in short segments, and can be customised to suit a learner's learning needs and learning style*" (Pollard and Hillage, 2001). A recent survey in the UK (Campaign for Learning, 2000) found that one of the main benefits of e-learning was seen as its accessibility: "*E-learning makes it possible for people to study at home, in the workplace or at a community learning centre. This gives new opportunities to many millions of workers who should soon be able to access high quality learning material with the approval and support of their employer and union.*" (NEC, 2000)

2. Learner-centric - e-learning is learner-centric. As Block and Dobell (1999) note: 'the learner is not a passive participant but a proactive searcher and finder of information'. Here, learning is organised for the convenience of the learner, fitting in with the learner's lifestyle, learning style and ability. "*E-Learning imparts more responsibility to learners by allowing them to customise their own learning experience, by choosing different learning objects within an overall package*" (Milligan, 1999).

3. Cost Effective - Another much proclaimed benefit of e-learning is cost effectiveness. "*The biggest benefit of e-learning is that it eliminates the expense and inconvenience of getting the instructor and students in the same place. According to Training Magazine, corporations save between 50-70 per cent when replacing instructor-led training with electronic content delivery*" (Urdan and Weggen, 2000).

4. Risk free - e-Learning is relatively risk free thus encouraging self-conscious learners, minimising bias, and empowering learners. "*Students taking an online course enter a risk-free environment in which they can try new things and make mistakes without exposing themselves; after a failure, students can go back and try again*" (Urdan and Weggen, 2000). e-learning allows the shy learner, the insecure learner, and the verbally challenged learner to flourish in the 'blindness of the learning engagement' (Block and Dobell, 1999). Also Greg Kearsley (1998) mentions that the computer-mediated communication involved in e-learning minimises discrimination and prejudice that arises naturally in face-to-face settings.

5. Interactive and collaborative - e-Learning is interactive. The Campaign for Learning (2000) note that e-learning moves learning beyond text and can provide an engaging and stimulating learning experience with different types of media and simulations of real world events.

6. Easy Administration – "*e-learning incorporates administrative functions which allow registration, payment, monitoring of learner progress, testing and record keeping*" (Teir, 2002). Block and Dobell (1999) note "*e-learning software empowers administrators to track performance and measure rates of return.*" Asymetrix note (1997) that it can be difficult to measure the overall effectiveness of traditional training, as it is often difficult to verify that training has been completed, and the extent to which the information given has been understood. However, they feel that e-learning overcomes these difficulties and enables the tracking of learner performance, and therefore enables the certification of learning.

7. Increases IT skills - The Campaign for Learning feel that e-learning empowers individuals to learn, and equips them with IT skills. They note: "*Internet-based learning empowers people. Because learning online demands that students have at the very least a basic understanding of IT skills and computer literacy, as more people learn via this method, so will the number of people with relevant IT skills increase.*"(*NEC*, 2000)

2.2.3 Potential drawbacks of e-Learning

Along with several advantages, some potential barriers to effective e-learning have also been identified through the years. Some of them are mentioned below:

1. Technology Dependence – "*Learners need access to the right hardware and software to benefit fully from e-learning*" (Pollard and Hillage, 2001). Sufficient bandwidth is often cited as a barrier to effective e-learning (Ruttenbur *et al*, 2000). Joanne Childs (2000) points to the frustrations and de-motivational aspects of e-learning caused by technological limitations.

2. Incompatible - Currently, there is much debate around the compatibility of e-learning elements, and work is under way to develop standards. Most proprietary e-learning systems can't talk to each other. E-learning Standards (like SCORM) have been developed which allow course content to be described, found, used, re-used, added to other course content. They ensure accessibility, interoperability, adaptability, reusability, durability, and affordability. Ruttenbur *et al.* (1999) feel that standards need to ensure e-learning is cross-platform, and that all of the components are speaking the same language.

3. Unsuitable for some types of learners - e-learning is not suitable for all learners (Pollard and Hillage, 2001). Greg Kearsley (1997), who looked at e-learning in higher education, noted that most online learning takes place via written messages, so writing skill and the ability to put thoughts into words become important skills if an individual is to get the most out of an e-learning experience. This medium of learning is not suitable for learners who are not self-motivated and self- disciplined (Waterhouse, 2005). It requires greater dedication and discipline than traditional classroom learning, as generally e-learners complete learning in their own time, at their own pace.

4. Impersonal at times - Some e-learning commentators believe it can be a less interactive training method than traditional classroom-based training. A UK survey carried out for the Campaign for learning (2000) revealed that some individuals found e-learning to be impersonal, frustrating and lonely. Hara and Kling (1999) in their qualitative study of web-based distance education at a US university found that students can feel isolated and especially frustrated with web-based learning and particularly with the absence of physical clues in communications with tutors and other learners.

5. Expensive initially - Although reduced cost is cited as a benefit of e-learning (Section 2.2.2), it is really only delivery cost which is reduced by e-learning, in comparison to other more traditional forms of training. E-Learning does incur considerable developmental and support cost: *"The initial costs of developing e-learning are higher than most equivalent traditional interventions."* (Brooke Broadbent, 2000). Some argue that the developmental costs of e-learning can be around twenty times greater than the developmental costs of traditional training. Work by Hunt and Clarke (1997) reports that *"it takes 200 person hours to develop one student contact hour of technology-based training, which compares to between 10 and 20 hours to prepare one hour of conventional classroom-based training."*

2.2.4 Constructivism and e-learning

Researchers in the field of educational technology have applied the constructivist theory to Internet-based or Web-based instruction (Tsai, 2001a; Yakimovicz & Murphy, 1995). Internet-based or Web-based instruction provides learning environments, which concur with the ideas about the practice of constructivist education. For instance, the hyper textual nature and rich connections of Internet-based instruction offer higher flexibility and more alternatives for instructional content, which may encourage students' autonomy and facilitate their inquiry and reflective thinking (Wen *et al*, 2004). The implications of constructivism for a learning environment include using curricula customised to the students' prior knowledge, the tailoring of teaching strategies to student backgrounds and responses, and employing open-ended questions that promote extensive dialogue among learners (Rovai, 2004).

Jonassen (1994b) suggested that constructivism should be applied to distance education and proposed a constructivist design model for online learning that included the following guidelines:

"Focus on knowledge construction, not reproduction.... Present authentic tasks. . .[that] provide real world case-based learning environments,.....Foster reflective practice, and enable context and content dependent knowledge construction,....Support collaborative construction of knowledge through social negotiation, not competition among learners for recognition" .

2.3 E-Learning: Teachers' Perspective

There has been a rapid growth in distance and online education in the last decade. Many courses taught in a traditional face-to-face format are incorporating one or more elements of online education, including the use of email, bulletin boards, chat rooms, virtual office hours, and online availability of course materials such as slides and links to tutorials which can be termed as blended teaching (Hislop & Atwood, 2000). This trend towards the increased use of online technology has resulted in a change in the nature of faculty workload as faculty members are increasingly expected to utilise online technology to fully or partially deliver education (Coppola, Hiltz, & Rotter, 2002; Smith, Ferguson, & Caris, 2001; Young, 2002). This part of the chapter reviews literature on teachers' attitude towards e-learning technology and also on motivating and inhibiting factors for teaching online. This is followed by a brief background to 'the University of Sheffield's' information and technology strategy and its vision for Sheffield graduates (as the research is carried out at the University of Sheffield).

2.3.1 Teachers' attitude towards e-learning technology

Some studies (Sun *et al*, 2006; Smeets, 2005 ; Piccoli *et al*., 2001 and Webster and Hackley, 1997) mention that teachers' attitudes toward e-learning have a significant effect on e-learners' satisfaction. Teachers play key roles in students' learning processes in either traditional face-to-face teaching environments or in remote learning environments. The effects of learning activities and students' satisfaction are influenced by teachers' attitudes in handling learning activities. For example, a less enthusiastic teacher or one with a negative view of e-learning education should not expect to have students with high satisfaction or motivation. The effectiveness of e-learning will be discounted according to the teachers' attitude (Sun *et al*, 2006). Bullock (2004) found that teacher's attitudes are a major enabling/disabling factor in the adoption of technology. Similarly, Kersaint *et al* (2003) found that teachers who have positive attitudes toward technology feel more comfortable with using it and usually incorporate it into their teaching.

Brock (1987) and Dillon (1989) noted that the lack of faculty participation has been a barrier to the growth of e-learning in higher education and Willis (1992) noted that while some faculty members have developed skills and abilities for teaching online, the majority require specialised training to become comfortable. Rich and Holtham (2005)

note that faculty adoption of new technology may be sluggish, or restricted to subgroups. Baylor and Ritchie (2002) state, "*regardless of the amount of technology and its sophistication, technology will not be used unless faculty members have the skills, knowledge and attitudes necessary to infuse it into the curriculum.*" Salmon describes a teacher as a facilitator in online learning and facilitator's role in relation to online learning as being to "*take control, make it good, make it real and make it worthwhile*" (Salmon, 2000). The key roles as facilitators include: communicating effectively with students (Salmon, 2000); modelling effective approaches to learning (Bender, 2003); facilitating and encouraging motivation (Wlodkowski, 1999; Donald, 1999; Keller, 1987); personalising the learning experience (Bender, 2003); providing learning experiences that engage with students' different learning styles and preferences (Wlodkowski, 1999), and giving timely and appropriate feedback (Bender, 2003).

Inhibiting factors to teaching courses online

Daugherty and Funke (1999) used a structured survey to elicit student and faculty opinions on the effectiveness of web-based instruction. The faculty identified the lack of preparation time to create assignments as one of the top five obstacles to web-based instruction. In addition, most of the faculty described a higher time demand for courses taught online as opposed to traditional courses. Paulsen (2003) writes in his paper on online education and learning management systems: "*You are going to work harder in teaching a course online, at least the first time.... Being a "virtual" professor is a little bit like parenthood. You are "on duty" all the time, and there seems to be no end to the demands on your time and energy*". The study of Schifter (2000a) cited inadequate compensation as being a significant barrier to faculty participation in distance education. This desire on the part of the faculty for additional compensation appears to have its basis on the belief that teaching online courses requires an increased effort over traditional courses. Maguire (2005) presents a literature review of drivers and inhibitors of online teaching, with lack of technical support cited most frequently by faculty and administrators as an institutional barrier. Butler and Sellbom (2002) identify three factors imposing barriers to adoption: "lack of institutional support, lack of financial support and most importantly lack of time to learn new technologies." Daniel and Cox (2002) have identified further reasons for resistance which may include: changes which are forced upon employees and alter the accepted ways of doing things, disrupt established social relationships, make people feel ineffective; additionally unwillingness

to face the effort of transition to new software, fear of the unknown, perceived loss of control and/or status, disruption to the daily routine, fear of job loss etc.

One key aspect of online education is instructor time. National Education Association (2000) carried out a study which performed telephone interviews with 402 faculty members at institutions of higher education to determine faculty opinions on both synchronous and asynchronous modes of distance learning. The National Education Association study results indicated that 53% of the faculty felt that they spent more time developing and teaching distance education courses. A more recent study by McKenzie, Waugh, Bennett and Mims (2002) of 19 institutions of higher education located in Georgia surveyed how online instructors utilise technology in their classes. The results indicated that 89% of the instructors surveyed responded that online courses required more time than traditional face-to-face courses or courses that employed a mixture of face-to-face and online modes of education. A few studies that are based on measurable data (DiBiase, 2000; Hislop, 2001; Visser, 2000) provide conflicting results as to the relative time required to teach an online course versus a traditional course. Therefore, there is a clear need for additional studies that provide data on instructor time.

Motivating factors to teaching online

A question often posed by academics is how e-learning can enhance the learner experience in a way that is not already possible through traditional delivery. Parker (2003) determined that teachers teach online for the same reasons as they teach traditional courses, which is for intrinsic rewards. Other motivating factors include a personal motivation to use technology (Betts, 1998; Bonk, 2001) or perceiving teaching via distance learning as an intellectual challenge. Some faculty feel that teaching via distance learning added to their overall job satisfaction (Betts, 1998; Schifter, 2000) and that teaching online provides optimal working conditions, as they are able to "teach" at any time and from any place. Another major motivation for using online teaching is the enormous amount of educational resources which are available on the Internet for facilitating teaching, while also providing students with online discussions by email, research capabilities and many more.

2.3.2 Meeting the Challenges at the University of Sheffield

Since, this research was carried out at the University of Sheffield, it is important to give a brief background to the University's Information and Technology Strategy and its

vision for Sheffield graduates. Like other universities in the United Kingdom, University of Sheffield is also obliged to consider ways that will enhance opportunities for independent learning, stimulate innovation in Learning and Teaching, and provide an integrated learning environment that combine excellence with efficiency in the organisation of teaching and promote independent learning (AMS, 2003). One way to do so is through the use of IT. IT has a major role in the University's commitment to widening access and improves the possibilities for staff and students to work from home. In response to widening access to learning, the University of Sheffield is committed to provide appropriate information, encouragement and training to the Staff and prioritise IT related developments in the University (IT Strategy University of Sheffield, 2001). The Learning and Teaching strategy for 2005-2010 responds to a number of key drivers, both internal and external, that influence learning and teaching. External drivers among other activities include initiatives like e-learning and the Higher Education Academy etc (LTA, 2005). The University of Sheffield has a vision for the Sheffield graduates. Along with other abilities, they should be able to handle ICT packages and specialist software efficiently, effectively and innovatively (LTA, 2005).

It is evident from the vision for Sheffield graduates and the Universities strategies that the nature of academic staff workload is changing and they are expected to utilise online technology to fully or partially deliver education. Therefore identifying their views about learning technologies becomes important. Most of the academic staff belong to the earlier generation and as pointed out by Diana and James (2005) it is the greatest challenge for higher education leaders, faculty, and staff - nearly all of whom belong to earlier generations: to understand the Net Generation learner and through this understanding provide the learning environments, services, and facilities needed to help these students achieve their potential.

2.4 E-Learning: Learners' Perspective

The constant growth of the Web influences and changes how online courses are designed and implemented. This, in turn, may also change the learners' perceptions of their online experience. Learner's perspectives and experiences can provide an in-depth understanding of traditional classroom based learning, e-learning and blended

learning. Therefore, this part of the chapter reviews literature on perceived strengths and weaknesses of these three modes of learning with respect to learners.

2.4.1 Perceived Strengths of traditional classroom learning

The teaching strategy that has been used for centuries is lecturing – an expert telling the students what they should know. A teacher's personal enthusiasm for a subject can be transmitted through non-verbal behaviours such as eye contact with students, voice projection, body language and story telling (Stephenson, 2001). The physical presence of the lecturer in the classroom creates a sense of responsibility to the students towards the subject and they can be provoked and stimulated by observing an expert teaching and demonstrating them (Brown *et al*, 2005).

One of the major advantages of lectures is that the learners can get response to their queries there and then. Hara and Kling's (2000) reported in their qualitative case study of a Web-based distance education course that the participants reported lack of immediacy in getting responses back from the instructor as one of the major reasons for them to feel frustrated about the online environment. Similar result is reported in a study conducted by Vonderwell (2003) in which students mentioned that a major disadvantage of an online course was the delay of immediate feedback from the instructor. One participant in the study stated that when he emailed a question to the instructor, "*it might take hours; maybe a day or so before you get an answer back for the question*". Lack of a sense of community and/or feelings of isolation were other challenges learners reported in their online learning experiences (Vonderwell, 2003).

Classroom learning is social. It provides the social interaction that human beings enjoy and need by affording a direct exchange of ideas (Voci and Young, 2001). It creates an interactive learning environment in which learners can test their own attitudes and choices against those of their peers and teachers. Thus enabling immediate, direct, personal and face-to-face feedback about the appropriateness of these responses (Voci and Young, 2001).

2.4.2 Perceived Strengths of e-learning

Generally classroom teaching has a high teacher-to-learner ratio, which leads to less interaction between teacher and learner. One to one relationships are emphasised more in online learning than in classroom lectures. According to Tiffin & Rajasingham (1995), the traditional classroom teaching means that besides organising a place for

learning, it is necessary to organise when teachers and learners meet and how they use their time. Typically, classroom instruction provides a set group of students with a set chunk of instruction on set dates for set period of time. Here one can visualise the importance of online learning by comparing the efficiency of this scenario with providing the information the individual learner wants, when the learner wants, at the pace the learner wants, for the length of time and with the frequency that suits the learner. In a study conducted at the University of Akron, Ohio (Coyner & McCann, 2004), several advantages of conducting an online course were analysed. According to their study, the learners can access the online course information at any time of the day and they can work at times/locations convenient to their lifestyle. They are no longer instructor dependent for information, resources and materials. Emphasis on threaded discussions, chats and forums encouraged learners to work together. According to a study on improving online learning (Song *et al*, 2004), participants reported that it was helpful not to have to travel to the campus. The ability to complete assignments and tasks at anytime was another reported strength. In a qualitative study, Petrides (2002) interviewed learners to obtain their perspectives on Web-based learning. When interviewed, some participants indicated that they tended to think more deeply about the subject areas when responding in writing as compared to giving verbal responses. They explained that they were able to continually reflect upon each other's reflections because of the public and permanent display of the discussion postings on the Web. Flexibility is another reported strength of online learning (Petrides, 2002; Schrum, 2002). Petrides (2002) stated that participants reported it was easier to work in collaborative groups in an online course without rearranging everyone's schedule as one might do in a traditional face-to-face course.

The benefits of e-learning are many including cost-effectiveness, enhanced responsiveness to change, consistency, timely content, flexible accessibility, and providing customer value (Rosenberg, 2001). Most of the studies on the assessment of students' attitudes towards online academic instruction have concluded that distance learning courses compare favourably with classroom-based instruction and enjoy high student satisfaction (Phipps & Merisotis, 1999). Also some potential value can be added to online learning by providing the opportunity for guest experts from around the world to share and contribute to a class by posting excerpts of articles, statements and so on (Paulsen, 1995).

2.4.3 Perceived Strengths of blended learning

Blended learning is both simple and complex. At its simplest, blended learning is the integration of traditional classroom face-to-face teaching with online teaching. At the same time, there is considerable complexity in its implementation with the challenge of virtually limitless design possibilities and applicability to so many contexts (Garrison & Kanuka, 2004). A more detailed analysis of blended learning is provided by Allan (2007) adapted from Sharpe *et al* (2006). It identifies the different aspects of learning and teaching, which may be blended together:

- *Time, e.g. synchronous or asynchronous learning activities and communication*
- *A place where learning takes place, e.g. on campus, in workplace, at home*
- *Different information and communication technologies (ICT), e.g. CD/DVD, first generation internet technologies, Web 2.0 technologies or developing technologies*
- *Pedagogy, e.g. teacher or student-centred, behaviourist or constructivist*
- *Types of learners*
- *Relationships with others in the learning process, e.g. individual learning, group learning etc.*

So, what are the advantages of blended learning? Blended learning offers the opportunity to combat the best of a number of worlds in constructing a programme that fits the particular needs in terms of time, space and technologies of a particular group of students. Blended learning offers increased flexibility, as it enables the designers to use a variety of approaches to meet the needs of the intended audience (Allan, 2007). Flexibility may be offered in terms of the time, space, and delivery of the programme. Rosenberg (2001) emphasises that people learn more effectively when they interact and are involved with other people participating in similar endeavours. E-learning is powerful when both training and knowledge management are integrated, but even more powerful when integrated with classroom training in a ''learning architecture''. He defines a learning architecture as ''the design, sequencing, and integration of all electronic and non-electronic components of learning to derive optimum improvement in competence and performance''. Cross (2000) reports 'the learning process breaks down when untouched by human hands. E-learning is not training by robot. A recent story in Information Week (Sullivan, 2002) highlighted just such an example.

> *"Ford Motor Company's engineering department set an ambitious goal of providing 160 hours of training to 20,000 employees. One form of training alone was not going to get the job done. As a result, the company now offers seven courses on the Web, seven on CD-ROM, and five in the classroom. In addition, after each web or CD-ROM course, Ford requires students to attend a two- to four-hour classroom training session to review case studies."*

One of the rationales for using blended learning is that it will enhance the engagement of learners by providing rich mixture of learning opportunities. This view acknowledges that individual learners are likely to be interested in and motivated by different approaches to teaching and learning (Allan, 2007).

2.5 Cultural issues in E-Learning

'The Germans live in Germany, the Romans live in Rome, the Turkeys live in Turkey, but the English live at home.'

(A nursery rhyme, quoted by Hofstede, Father of Cultural Dimensions)

The field of cultural studies is a challenging field to define and examine, as it requires one to reach outside of his worldview to observe, analyse and contrast cultures. The following sections explore the role of culture in the field of e-learning.

In an increasingly competitive environment, all universities are obliged to consider how they can increase their revenues and one way is through attracting international students who pay an overseas fee. Universities around the world are opening their doors for international students also due to economical and legislative (Bologna) considerations. This process of Internationalisation and Globalisation has made Universities increasingly multicultural. As people from different cultural groups take on the exciting challenge of teaching and learning together, cultural values sometimes conflict. We can misunderstand each other without knowing that culture is acting upon us. Sometimes we are not even aware that we have cultural values or assumptions that are different from others (DuPraw and Axner, 1997). Consequently it becomes important (as providers) to be able to cater to both home student and overseas students and minimise the bias as much as possible.

A multicultural classroom has various students who come from countries where the patterns of classroom communication are quite different. Thus, the ways in which these students talk and act in the classrooms may seem strange or inappropriate. And thus these students may find it difficult to infer the norms for participation in classroom events (Johnson, 1995). Such students are faced not only with learning a new language, but also with a new social code of conduct, according to which teachers' and students' intentions, behaviors, and emotions are expressed in different ways (Trueba 1987 cited in Johnson, 1995). The literature suggest that cultural differences can affect students' comfort level in working collaboratively versus individually, and they are reflected in the background knowledge students bring to a new learning situation (Moll *et al.*, 1993).

Online education has opened the way for educators to reach learners " beyond bricks and mortar" campuses (McIsaac, 2002), including many people who would otherwise not have access to higher education. Patti Shock, professor and director of distance learning at Harrah College of Hotel Administration at the University of Nevada Las Vegas, said in a conference (Tufel, 2007) that she had more interaction with online students than she ever had with students in person. "*We have many international students,*" she added, "*and most are too shy to ask questions in a class of 60 students, but they will ask the questions online.*" Therefore, to determine if the perceptions of e-learning differ for international students and home students, a further investigation in the area of cultural differences seemed important to provide greater insight to the learners' perception of e-learning. The literature review that follows first explores the Internationalisation of the UK Universities followed by the meaning of culture (in the context of this research), after clarifying the nature of culture, this section then describes Hofstede's cultural dimensions, cultural differences in educational setting and cultural issues in online learning and the role of online learning in cross border education environment.

2.5.1 Internationalisation of UK Universities

David Lefevre (CATaC, 2006) in a conference on 'Cultural Attitudes towards Technology and Communication' said "*There are two current trends in higher education: an increase in the use of learning technologies, and an internationalisation of the student body.*" A further examination of the 'cultural issue' in education revealed that the number of overseas students in the United Kingdom is increasing; it is 1 in 7 now and in future it will increase even more (BBC news1a). The United Kingdom is second only to the USA (BBCa) in the international student market. The

number of overseas students wanting to attend UK universities could triple to more than 870,000 by 2020 (BBCb). This can be seen in the following three screen shots taken from the BBC website.

Figure 2 – Rise in Overseas Students (screen shots from BBC website)

The above three screen-shots reveal that the number of overseas students in UK has now risen to 330,000 - one in seven of the total (BBCc, 2007). And there are plans to attract a further 100,000 overseas students (BBCd, 2007) to the UK over the next five years (as unveiled by ex-Prime Minister Tony Blair). Not only in UK, but all over the world there is a growing demand for higher education. The number of students worldwide doubled in just 20 years (World Bank, 2000) and they are expected to grow much more by the year 2025 (West, 1997). With the growth in both numbers of students and the wider access to new and cheaper technologies, requests from students for information and support grow in number. These requests become more rapid and intensive (Adria and Woudstra, 2001). "*The crisis in access to higher education has formed the main argument for technology-supported e-learning as a cost-effective alternative*" (Daniel, 1996).

With this growing internationalisation of the UK Universities, it becomes important to understand the role of culture in education; the differences/problems that occur in a multicultural educational environment and the role culture plays in the perception of e-learning with respect to home and overseas students. The following section first explains the definition of culture in the context of this research.

2.5.2 Definitions of Culture

It is impossible to find one definite answer to the question, " What is Culture?". Kroeber and Kluckholm (1952) identified 164 different definitions of culture. The first official definition of culture found in the literature was from British anthropologist Sir Edward Tylor (Kroeber & Kluckholn, 1952). Tylor defined culture as *"that complex whole which includes knowledge, belief, art, morals, law, custom and any other capabilities and habits acquired by man as a member of society*" (Tylor 1871 cited in Edmundson, 2007). According to Kroeber and Kluckhohn (1952), "culture consists in patterned ways of thinking, feeling and reacting, acquired and transmitted mainly by symbols; the essential core of culture consists of traditional ideas and especially their attached values". Bodley (2000) suggested looking at culture in three aspects: What people think? What people do? And what people produce? He categorised these aspects as mental, behavioural and material.

Hofstede (2001) also known as the father of cultural dimensions; treats culture as the *"collective programming of the mind that distinguishes the members of one group or category of people from another"*. Hofstede argues that from the many terms used to describe culture, the following three together with values, cover the total concept rather neatly: symbols, heroes and rituals.

- *"Symbols: are words, gestures, pictures and objects that carry often complex meanings recognised as such only by those who share the culture.*
- *Heroes: are persons, alive or dead, real or imaginary, who possess characteristics that are highly praised in a culture and thus serve as models for behaviour.*
- *Rituals: are collective activities that are technically unnecessary to the achievement of desired ends, but that within a culture are considered socially essential"*. (Hofstede, 2001)

The word culture is usually reserved for societies but it can also be applied to any human group: an organisation, a profession, an age group, an entire gender, or a family. In this research, the focus is on national culture: the cultural difference that occurs between two nations in terms of teaching and learning.

2.5.3 Cultural Dimensions

Among the many cultural schemas proposed by researchers, Geert Hofstede's five National Cultural Dimensions is the most frequently mentioned framework in the literature. These five cultural dimensions are as follows:

1. *Individualism versus Collectivism (IDV): "Individualistic cultures such as those of Western Europe and North America emphasise autonomy, individual initiative, emotional independence, primacy of personal goals over group goals and a right to privacy*" (Triandis, 1994 cited in Youn, 2000). "*In contrast, collective cultures such as those of China, Japan, Korea, South-east Asia, Africa and South America emphasise collective identity, emotional dependence, and primacy of in-group goals over personal goals and in-group cohesiveness and harmony*" (Youn, 2000).

International students from China, Japan, Korea, South-East Asia and Africa (collectivistic countries) arrive in the individualistic countries (US, Western Europe) with a set of assumptions or beliefs and expectations about learning. They may believe that learning is following instructions from professors, hesitate or even be afraid of challenging professors or other classmates and so on. Therefore, the individualist or collectivist who plans to teach in a cross-cultural setting may need to consider this differential cultural impact on learning beliefs. Sometimes, teachers from individualist cultures are sent to more collectivist environments. A typical complaint from such teachers is that students do not speak up in class, even when the teacher puts a question to the class (Hofstede, 2001). Most collectivist cultures tend to be teacher-centred with little two-way communication (Hofstede, 2001). Individualist and collectivist societies perceive the purpose of education differently. In the former, the purpose of learning is not so much to know *how to do*, as it is to know *how to learn*. The assumption is that learning in life never ends; even after school and university it continues. In a collectivist society, "*learning is more often seen as a one-time process, reserved for the young only, who have to learn how to do things in order to participate in society*" (Hofstede, 2001). In the collectivist classroom, confrontations and conflicts with fellow classmates and teachers should be avoided while in an individualist classroom it can be part of the

teaching-learning environment. Also cultural differences can affect students' comfort level in working collaboratively versus individually, and they are reflected in the background knowledge students bring to a new learning situation (Moll *et al.*, 1993).

Tylee (2003) analysed cultural issues surrounding learning styles and access perceptions in the online environment and cites that 'individualism and collectivism' can influence perceptions about:

- the willingness to provide information such as personal data that will single a person out as an individual and that person would therefore be differentiated from the group;

- the rights of the individual compared to the rights of the group to have access to online information and therefore the idea that if it is not available to all then maybe it should not be made available to any;

- accessing information and learning that will set the individual apart from the group;

- the prominence given to youth and action compared to experienced, wise leaders and states of being;

- motivation based on personal achievement.

2. *Power distance (PDI)*: "*Power distance is the extent to which people in a society accept the fact that power in institutions and organisations is distributed unequally among individuals*" (Hofstede, 1994). Throughout their history, for example, Chinese have shown respect for age, seniority, rank and family background, so what an elderly person says carries more weight over the opinions of younger people. To an American, youth is often prized over age (Jiang, 2001).

In the large power distance system the quality of an individual's learning is virtually exclusively dependent on the excellence of his or her teachers. "*In the classroom there is supposed to be strict order, with the teacher initiating all communication. Students in class speak up only when asked to, teachers are never publicly contradicted or criticised. In the small power distance situation, students make uninvited interventions*

in class and are supposed to ask questions when they do not understand something. They argue with teacher, express disagreement and show no particular respect to teachers outside the school. The education process is student-centred and the quality of learning is to a considerable extent determined by the excellence of the students rather than teachers" (Hofstede, 2001).

Tylee (2003) analysed cultural issues surrounding learning styles and access perceptions in the online environment and cites "*For the user interface to facilitate access and not present barriers (keeping power distance in mind) the designer needs to consider:*

- *How it focuses on expertise, authority, certifications, logos and so forth;*
- *The prominence given to the university 'leaders' compared to the students;*
- *The importance given to restrictions or barriers to access to online information with the high power distance cultures wanting to see explicit,*
- *Enforced and frequent restrictions to users and the low power distance cultures wanting to see transparent access and implicit freedom to move about the site; and*
- *The social roles that are used to organise the information contained on the site with high power-distance cultures wanting to see that the staff section is sealed off from the students' section."*

3. Uncertainty Avoidance: is defined as the extent to which the members of a culture feel threatened by ambiguous or unknown situations. In cultures with high uncertainty avoidance teachers are expected to be the experts who know the answers, the instructional design is expected to be organized and clearly articulated for acceptance (Lim and Jusri, 2003). Tylee (2003) analysed cultural issues surrounding learning styles and access perceptions in the online environment. She used Hofstede's dimensions as the base for considering the links between culture and online access perceptions. According to her, the UAI dimensions can influence perceptions about:

- Predictability or otherwise of the online medium;
- The amount of choice available;
- Attempts to reveal or forecast the results or implications of actions before users act; and

- The use of clues such as colour, typography and sound to reduce ambiguity, especially in navigation.

4. Masculinity vs. Feminity: Femininity and masculinity refers to the traditional assignment of gender roles and not physical characteristics, that is, the feminine roles of orientation to the home, children, people and tenderness and the masculine roles of assertiveness, competition, and toughness (Tylee, 2001).

5. Long term vs. Short-term orientation: Long-term time orientations seem to be influential in cultures where philosophies are many thousands of years old. For example, the Asian cultures influenced by Confucian philosophy. These long-term time orientations share the beliefs that older people have more authority than younger people. It also means that in work people should try to acquire skills and in education, be hard working, frugal, patient and persevering (Tylee, 2001).

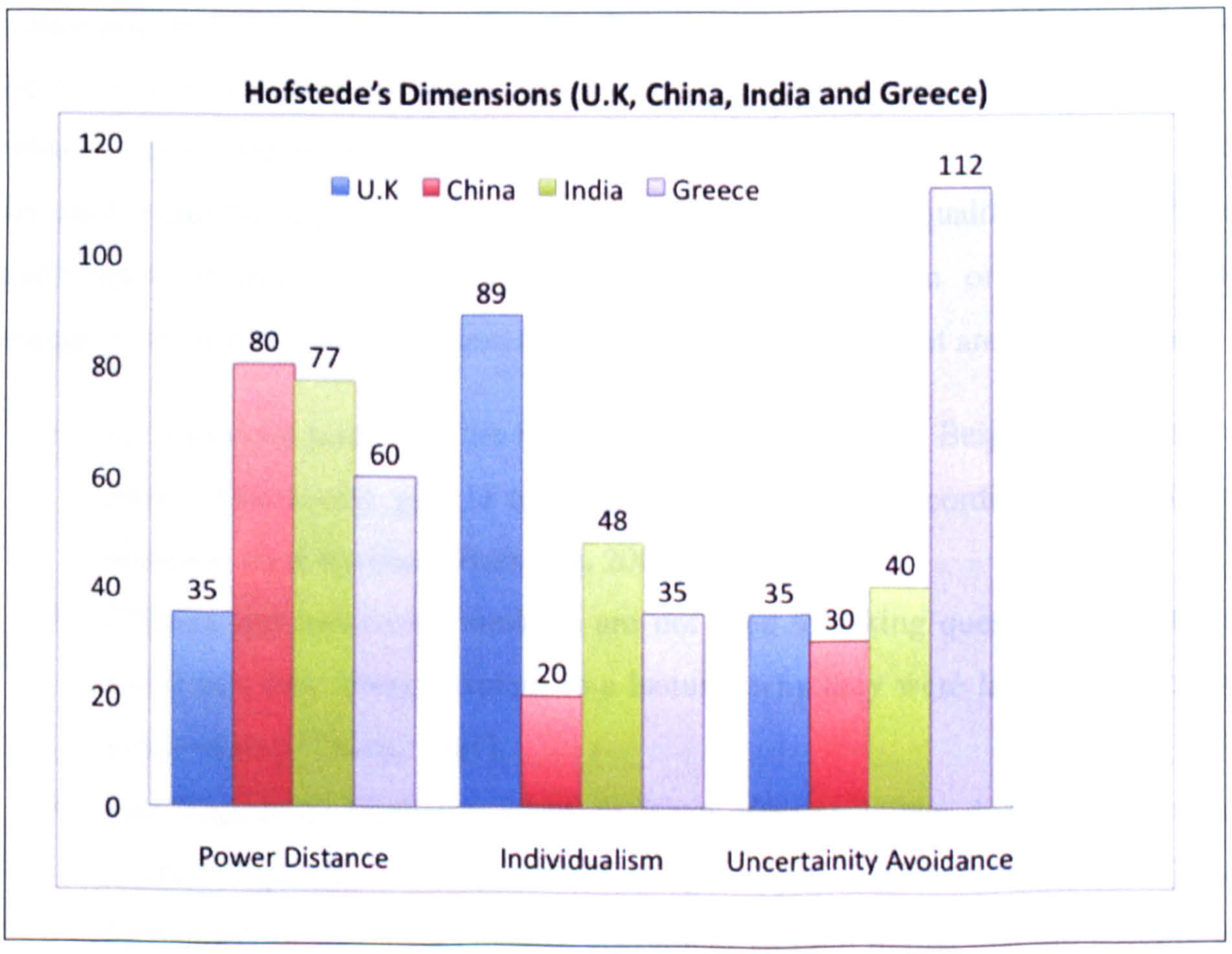

Figure 3 - Hofstede's Dimensions (A comparative graph for UK, China, India and Greece)

Geert Hofstede assigned a score/index to each country (in his study) on the five cultural dimensions stated above. The formula for calculating the index for each

dimension was derived such that the index values ranging from 0 – 120. Of the five dimensions – individualism, power distance, and uncertainty avoidance – go a long way towards explaining the student behaviour. Based on these index values for the three dimensions (Power Distance, Individualism and Uncertainty Avoidance) for U.K, China, India and Greece (China, India and Greece being the top three exporters of students to UK), the researcher has plotted a graph (See **Figure 3**), which compares the scores for the four countries.

2.5.4 Frequently Encountered Cultural Differences

Carol Archer (1986) uses the term 'culture bump' to refer to cases where an individual from one culture finds himself or herself in a strange, different or uncomfortable situation when interacting with persons of a different culture. Thorp (1991) uses 'confused encounters' to describe the mismatch of expectations between staff and students. Dupraw and Axner (1997) noted that "*cultural boundaries are marked by differences in a) communication style, b) attitudes towards conflict, c) approaches to completing tasks, d) decision-making styles, e) attitudes towards disclosure, f) and approaches to knowing, learning and teaching*". Differences in the attitude and behaviour of a student can be found in: addressing the teacher, eye to eye contact with the teacher and facial gestures in class, punctuality, notions of equality or hierarchy in staff/student relations, reaction towards corrections, criticism or praise. A few examples of such confused encounters in a classroom environment are given below:

- An American teacher at the foreign language institute in Beijing exclaimed in class, "You lovely girls, I love you!" His students, according to a Chinese observer, were terrified (Hofstede, 2001).
- Chinese and Indonesian students are not used to asking questions in lectures and if late they always explain to a lecturer why they were late and apologise before sitting (Thorp, 1991).
- Native-speaking English teachers in Japan often encounter difficulty adjusting to their Japanese students' norms of participation (Wordell, 1985). These difficulties stem from a range of social and cultural norms that are specific to Japanese schooling. "*Japanese students are reluctant to speak in front of other students unless they are sure what they are saying or asking is 100% right*" (Thorp, 1991). Also, nonverbal aspects of Japanese communication, such as avoiding eye contact when speaking to someone of a higher status and

constantly nodding one's head as confirmation in conversation, are often misinterpreted as extreme shyness, uncooperativeness, or lack of comprehension (Kitade 1990). Clancy (1986) describes the communicative style of the Japanese as indirect, context dependent, rich in connotation, and consistent with the ideal of holding the interests of the group above those of the individual. The Japanese place high value on silence as opposed to explicit verbal expression, on what is perceived as socially acceptable as opposed to individual feelings, and on an overwhelming need to not offend.

- Differences in culturally learned ways of communicating can also be found in the ethnographic descriptions of the communicative styles of various Aboriginal communities in Australia. Malcolm's (1979, 1982) ethnographic descriptions of Aboriginal children in Western-style classrooms suggest that these children fail to participate in and learn from classroom events because of contrasting communicative styles. Much to their teachers' frustration, Aboriginal students were found to be talkative when they were part of the audience but silent when asked a direct question. Since this sort of communicative style violated the rules for participation in most Western-style classrooms, Aboriginal students were often left out of the teacher-student interactional patterns during classroom instruction.
- Delgado-Gaitan (1987) observed Mexican students at home and in their Anglo-American elementary schools and found that the communicative styles learned at home were not recognised at school. At home, Mexican students were expected to work collectively and cooperatively with others. There was an expected amount of turn taking, negotiation of shared responsibility, and collaboration in the completion of any task. While Mexican students were sometimes expected to demonstrate their ability to lead by assuming a more competitive role, more often than not they were encouraged to cooperate in collaborative ways with others. At school, Mexican students were found to resist working individually and instead seemed to want to share their answers with others. This, of course, violated their Anglo-American teachers' belief in the importance of individual work and was interpreted as "cheating," which was unacceptable.
- *Teacher – Student Interaction:* Hofstede (1986) analysed the nature of teacher-student interaction styles in the US. He found that the "*teachers in the US tend*

to allow the students to initiate and control their learning experiences (student – centred approach) and they also allow the students to contradict and criticise the teachers and the teachers regard such disagreement as a stimulating exercise and do not take the criticism personally". Jehng *et al* (1993) showed that "*learning beliefs are a product of the activity, the culture and the context in which they are cultivated*". Hofstede (1986), for example, observed in his research that "*the students in the US are open-minded, try to reduce uncertainty and integrate new and old ideas and change their belief system accordingly*". In contrast, according to Hofstede's analysis, the teacher – student interaction style in South East Asian, especially in Korea, is teacher-centred, where the teacher-student relationship tends to be binding and personal. Students are expected to follow orders or instructions from the teacher. That is, it is the teacher and not the student who initiates students' learning experiences. In such a case, any criticism directed towards the teacher is interpreted as disloyalty and rudeness towards the teacher.

- *The roles of language, listener and speaker*: From a cross-cultural perspective, the literature suggests that different cultures conceptualise the role of language in communication differently (Gudykunst and Ting-Toomey, 1988). For example, in an individualistic culture such as dominant Anglo-American culture, verbal language is a primary means of communication and of transmission of information. People in the individualistic culture therefore value explicit language and tend to stress the importance of accurate expression. In contrast, in a homogeneous, collective culture such as the Korean, verbal language is often unnecessary to share ideas and feelings with others because people may assume shared knowledge and background. In this case, articulate language is less required than in the case of the individualistic culture, and the collective culture tends to stress the importance of good understanding instead, i.e. receptive language skills. Asian cultures emphasise the listener's role and responsibility in assuring successful communication, whereas Western cultures place the responsibility primarily on the speaker. This pattern suggests cultural differences in language development, such that Asian children may develop higher-level receptive skills and Western children may develop higher-level expressive skills.

2.5.5 Culture and e-learning

With the growth of globalisation, the students enrolling in e-learning programs have become increasingly diverse with respect to culture (Edmundson, 2007). Edmundson (2007) says in his book 'Globalised E-Learning Cultural Challenges', "*Given the increasingly heterogeneous nature of groups of learners on online education, we must give much more consideration to how we can accommodate learners from different cultural backgrounds*". This means that e-learning content needs to be designed in a way which reduces the bias in the learning environment against non-native learners. Some cultural issues that can arise in an e-learning environment (thus creating a bias) are given below:

- Content of materials: Some content in certain subjects such as history, religion or politics might be very sensitive in different social contexts. (Joo, 1999)
- Language Differential: Language and culture are interrelated. In preparing an online learning environment for learners with different cultural backgrounds, simple sentences should be used and slang should be avoided. (Bentley *et al*, 2005)
- Writing Structures: The ways in which ideas are presented and constructed should be examined. Some translated texts can appear obscure to non-native English speakers. (Boo, 1999)
- Learning Style Differential: Students learn how to learn based on their cultural background (Bentley *et al*, 2005). Teachers and designers must be sensitive to these differences.
- High and Low context differential: High and low context cultures have different demands for concrete versus abstract information, and this might cause problems when they meet online. (Bentley *et al*, 2005)
- Emphasis on Autonomy of Learners: E-learning encourages autonomy of learners; this may not go well with high power distance societies, which have learner tendencies to lack autonomy and self-direction in relation to their studies. Selinger (2003) undertook a formative evaluation of the Cisco Networking Academy, a program involving 300,000 students in 149 countries. She discovered widely differing uses of the same online materials in differing cultures. For example, students in Denmark and Sweden were encouraged to take greater responsibility for their own learning than those in France. The

Scandinavians had greater autonomy, collaborated more, and relied less on the tutor than those in France.

- Learner-centred environments: E-learning provides learner-centred environments that may tend to challenge the authority of tutors/teachers in high power distance cultures. Therefore, these environments need to be introduced carefully.

2.5.6 The Role of e-learning in Cross-border educational environment

From a global perspective, there is a growing demand for higher education, which can roughly be distinguished into two main trends. On one hand, there is the rapidly growing need for the widening of initial access to higher education (Wende, 2002). The number of tertiary students worldwide doubled in size in just 20 years (from 40 million in 1975 to more than 80 million in 1995) (World Bank, 2000) and they are expected to grow to more than 150 million by 2025 (West, 1997). On the other hand, there is the increasing need for more diversified and flexible types of higher education (Wende, 2003). "*It has become clear that many countries are unable to meet the growing and diversifying demand for higher education. Consequently, the matching of demand and supply is increasingly taking place across borders (with different cultures, nations, regions and indeed academic disciplines), facilitated by the use of information and communication technology, thus leading to a global market for higher education*" (Wende, 2002). Michael Crossley commended the building of bridges between intellectual cultures and traditions (Crossley, 2000). Globalisation is the catalyst for the apparent revival of interest in comparative education, which leads to cultural borrowing. Few countries remain sealed in the development of their educational systems, and for centuries there has been a lively international traffic in educational ideas and practices (Alexander, 2001). There can be many ways in which educational ideas and practices can be transferred from one country to another:

1. Physical mobility of scholars and students: "*Through the provision of pedagogical conditions in which students become border crossers in order to understand otherness in its own terms*" (Giroux, 1992).

2 Collaborative research and joint teaching/learning projects: Through the provision of pedagogical conditions in which the institutions become border crossers in order to educate the underprivileged with their expertise (Giroux,

1992). "*There are examples of countries (e.g., Malaysia) that have deliberately invited, under clear regulations, foreign higher education institutions to move into their country to enlarge the higher education provision, which the country itself is not able to develop. China is for the same reason admitting foreign institutions*" (Wende, 2002).

3. Online learning: "*There are in fact only few robust examples of fully online universities (exceptions are, for instance, University of Phoenix Online, DeVry University, and Jones Virtual University)*" (Wende, 2002).

4. Blended learning: a combination of online and on-site learning that make physical presence in target countries more important.

In any of the above cases, Border pedagogy has to set up the conditions to create non-biased culturally sensitive environments for the target audiences. As stated previously, the need to shift from behaviourist approach to constructivist approach in e-learning to promote a more learner-centred higher-order thinking environment has been noted by many authors (Brown, 2003; Huba and Freed, 2000; Wang, 2006; Smith and Kolosick, 1996; Pillay, 2002; Weimer, 2002; Wang, 2007) but what they have failed to investigate is the implications of this change in educational philosophy on different cultures and the connection between educational philosophy and culture. Li (1999) details the findings from a three-year study of student responses to the western teaching staff. Li's study points to a world of conflicts in which the students slowly withdraw from the classroom and thereby the learning process. Students cite the fact that the classroom experience did not live up to their expectations of what constitutes quality learning (Li, 1999). What is important to investigate here is, if there a similar risk of creating a bias for online learners (from cultures that promote high power distance and high uncertainty avoidance) by giving them an environment which promotes active learning, reflective practise, collaborative and group work and autonomous learning (a true constructivist approach to learning) which may seem alien to them. "*Instructional design cannot, and does not, exist outside of considerations of culture*" (Henderson, 1996). Theories of learning and of cultural difference suggest that the effectiveness of e-learning systems/environments may be reduced where such systems are transferred into cultures for which they were not designed (Dunn, 2007). Yet, much of the rationale for e-

learning, rests on its ability to provide effective learning experiences, cost effectively to large, widely distributed audiences.

Chapter 3 – Research Methodology

CHAPTER 3 – RESEARCH METHODOLOGY

3.1 Need for a Credible Research Methodology

Once the research question has been precisely defined, a clear research design must be developed. A research design is a general plan of how to collect and analyse the needed information (Zikmund, 2000). It involves setting objectives, specifying the data collection sources, making a data analysis plan, and considering the limitations associated with the research. Research strategies that may be employed include experiment, survey, case study, action research, descriptive, exploratory, and explanatory studies. Data collection may include quantitative or/and qualitative approach. Some research strategies may depend heavily on one type of data-collecting method – but not exclusively. Saunders *et al.* (2000, p. 98) point out that, like data collecting methods, research strategies, do not exist in isolation and they can be mixed. Judith Bell (1993) in her book "Doing your research project" says

> *"Classifying an approach as quantitative or qualitative, ethnographic, survey, action research or whatever, does not mean that once an approach has been selected, the researcher may not move from the methods normally associated with that style. Each approach has its strengths and weaknesses and each is particularly suitable for a particular context."*

In the following paragraphs, the research strategy (Action Research) and data collection procedures (both qualitative and quantitative) used in this research are explained.

3.2 Linking Qualitative and Quantitative Data

Qualitative research is a broad term for research methodologies that describe and explain persons' experiences, behaviours, interactions and social contexts (Strauss and Corbin, 1990) without the use of statistical procedures or quantification. Qualitative methods are often useful for eliciting contextual data to improve the validity of survey instruments and questionnaires used in quantitative research (Fossey and Harvey, 1998). Qualitative research aims to give privilege to the perspectives of research participants and to "*illuminate the subjective meaning, actions and context of those being researched*" (Popay *et al*, 1998). Qualitative research findings are presented as textual

descriptions that should illuminate the subjective meanings of the phenomena, or social world, being studied, but which should also place the findings in context (Popay *et al*, 1998). Interviewing, focus groups, and participant observation are common modes of qualitative data gathering. Qualitative research interviews aim to elicit participants' views of their lives, as portrayed in their stories (Rice and Ezzy, 1999).

Quantitative research, as the name implies, deals with measurable characteristics (also called parameters, variables or factors, according to professional jargon). "*The simplest form of quantitative research is the collection and systematic review of existing data, or alternatively, prospective review of crucial events, as in quality assessment of clinical or laboratory routines*" (Cohen and Manion, 1994).

Triangulation - The late Red Kerlinger (Miles and Huberman, 1994), quantitative researcher once said, "*There is no such thing as qualitative data. Everything is either 0 or 1*". Against this view, we have many qualitative researchers (Campbell, 1974; Berg 1989), according to whom; all research ultimately has a qualitative grounding. But at the bottom, we have to face the fact that numbers and words are both needed if we are to understand the world (Miles and Huberman, 1994). As Kaplan (1964) put it, "*Quantities are of Qualities, and a measured quality has just the magnitude expressed in its measure*". Howe's analysis (1985) show that quantitative and qualitative methods are "intertwined", not only at the level of specific data sets but also at the levels of study design and analysis. Therefore, triangulation of qualitative and quantitative data is done to increase credence in the interpretation and to validate the data observed. Triangulation method is a way of combining both qualitative and quantitative data (Burns and Grove, 1997). Triangular techniques in the social sciences attempt to map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one standpoint and, in so doing, by making use of both qualitative and quantitative data (Cohen *et al*, 2000). With multiple approaches within a single case study, we are likely to nullify some extraneous influences. The main emphasis in triangulation is on combining methods, e.g., survey questionnaires with in-depth interviews. The idea behind taking two kinds of data collection method is that if diverse kinds of data support the same conclusion, confidence in the conclusions is increased. Triangulation in this research was achieved by collecting both quantitative and qualitative data using questionnaires (for Learners' Perspective and Teachers' Perspective), nominal groups

(for Learners' Perspective), Web Log Analysis (for Learners' Perspective) and Interviews (Cultural Issues).

3.3 Action Research

There are many definitions of Action Research. Hopkins and Ebbutt (1985) describe action research as a form of "*disciplined inquiry, in which a personal attempt is made to understand, improve and reform practice*". Corey (1953 cited in Cohen *et al*, 2000) defines it as "*a process in which practitioners studies problems scientifically so that they can evaluate, improve, and steer decision-making and practice*". Further, Kemmis and McTaggart (1992) defines action research as an approach to *improving education* by *changing* it and learning from the consequences of changes. Cohen and Manion (1989) describe it as an on-the-spot procedure to deal with a concrete problem located in an immediate situation. This means that the step-by-step process is constantly monitored over varying periods of time and by a variety of mechanisms (questionnaires, interviews, case studies etc) so that the feedback may be translated into modifications, adjustments, directional changes, redefinitions, so as to bring about lasting benefit to the ongoing process itself.

The essentially practical, problem solving nature of action research makes this approach attractive to practitioner-researchers who have identified a problem during the course of their work, see the merit of investigating it and if possible improving practise (Bell, 1993). Action research allows us to give a *reasoned justification* of our educational work to others because we can show how the evidence we have gathered and the critical reflection we have done have helped us to create a *developed, tested and critically-examined rationale* for what we are doing (Cohen *et al*, 2000).

Zuber-Skerritt (1996b) sets critical action research into a cyclical process of: (1) strategic planning, (2) implementing the plan (action), (3) observation, evaluation and self-evaluation, (4) critical and self-critical reflection on the results of (1) - (3) and making decisions for the next cycle of research (as shown in the figure below).

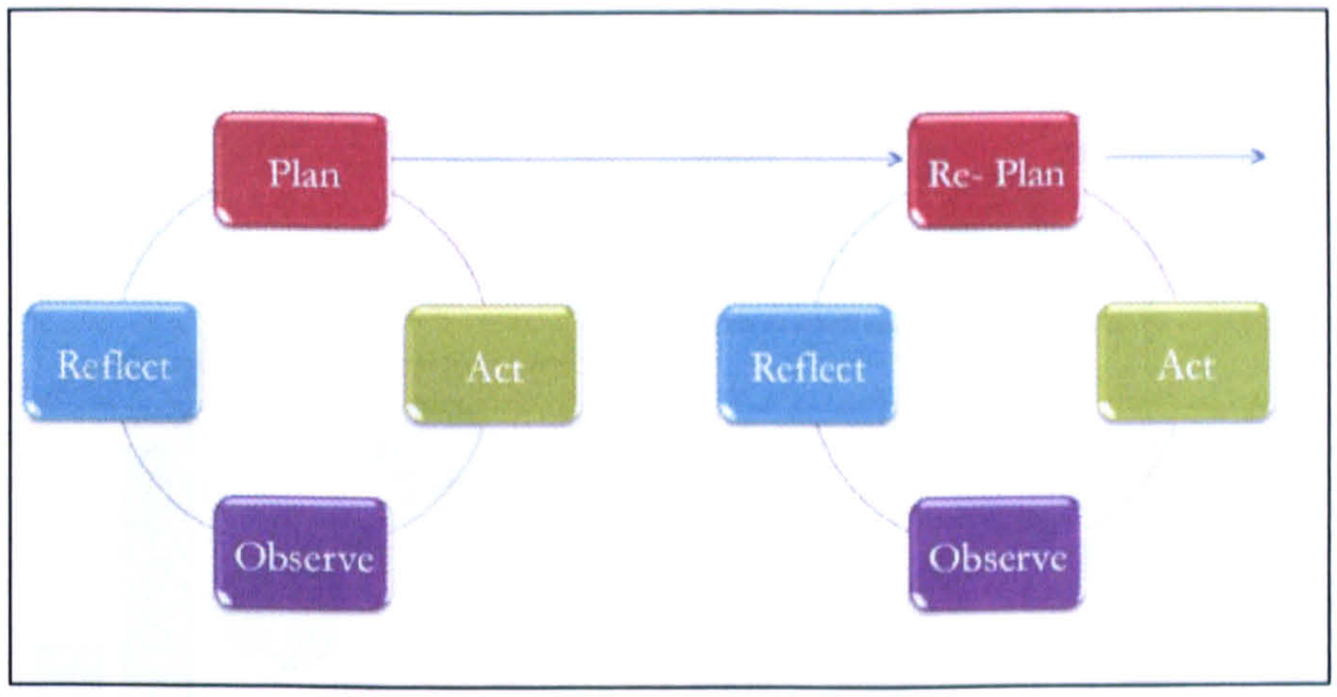

Figure 4 - Action Research Cycle (based on Zuber-Skerritt model)

Cohen *et al* (2000) states "action research is a powerful tool for change and improvement at the local level". The key principles of action research (planning, acting, observing, reflecting followed by re-planning, further implementation, observing and reflecting) suggested by Kemmis and McTaggart (1992) appear to apply well to the aims of this Dissertation. This approach has been used in this research to gain sufficient insight into the teachers' and learners' perspective of e-learning thus identifying barriers (and motivators) to adopting and implementing e-learning in higher education. The researcher intends to obtain and evaluate the results of questionnaire and nominal groups through these processes/stages of action research. It was necessary to plan the strategies carefully as action research is sequential, each step dictating the next. It was this consideration in mind that the model **Figure 5** was designed. The Learners' Perspective part of the study comprised of three action research cycles obtaining data through surveys, nominal groups and web log analysis. The Teachers' Perspective part of the study obtained data through questionnaires (containing open ended and closed ended questions to collect both quantitative and qualitative data), and the cultural part of the study comprised of two cycles obtaining data through surveys and interviews. All the action research cycles are explained in detail in the coming chapters.

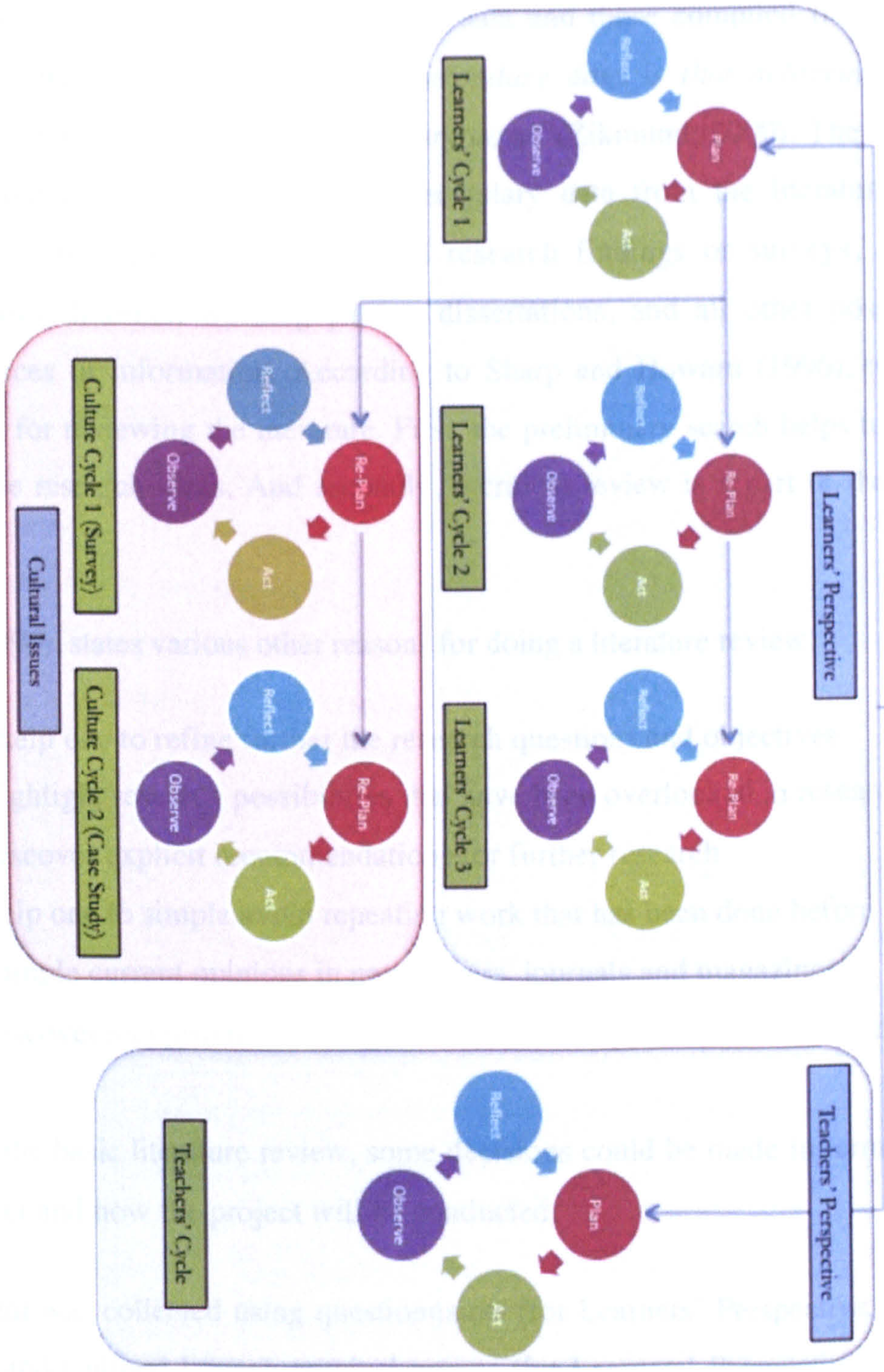

Figure 5 - Research Model (Action Research Cycles)

3.4 Data Collection - Primary and Secondary Data

For the Action research Strategy that is explained above, both secondary and primary data collection methods were used. ***Secondary data*** include both quantitative and qualitative data and can be used in both exploratory and descriptive research. According to Saunders *et al.* (2000), secondary data can be classified into three main

sub-groups: documentary data, survey-based data and those compiled from multiple sources. "*The main advantage of using secondary data is that achieving them is always less expensive than obtaining primary data*" (Zikmund, 2000). The first stage of the research comprised of collecting secondary data from the literature review. Sources were investigated from published research findings or surveys, academic journals, books, Internet, working papers, dissertations, and all other possible and relevant sources of information. According to Sharp and Howard (1996), two major reasons exist for reviewing the literature. First, the preliminary search helps to generate and refine the research ideas. And secondly, a critical review is a part of the research process.

Gall *et al* (1996), states various other reasons for doing a literature review.

- "To help one to refine further the research questions and objectives
- To highlight research possibilities that have been overlooked in research to date
- To discover explicit recommendations for further research
- To help one to simple avoid repeating work that has been done before
- To sample current opinions in newspapers, journals and magazines
- To discover and provide an insight into research approaches and strategies."

After doing the basic literature review, some decisions could be made in terms of what data to collect and how the project will be conducted.

Primary Data was collected using questionnaires (for Learners' Perspective, Teachers' Perspective and Cultural Issues), nominal groups (for Learners' Perspective), Web Log Analysis (for Learners' Perspective) and Interviews (Cultural Issues).

Questionnaire: What data needs to be collected and how to analyse them are crucial to determine the design of a questionnaire. Unlike in-depth interviews, the questions asked in a questionnaire need to be defined precisely prior to data collection. According to Dillman (1978 cited in Saunders *et al.*, 2000), there are four distinct types of variables that can be gathered through questionnaire: attitude, belief, behaviour and attribute. Attitude variables indicate how respondents feel about something. Belief variables record what respondents consider or believe is true or false. Behaviour variables indicate what people did in the past, do now or will do in the future. And attribute variables contain data

about the respondents' characteristics. Also, the questionnaire could be either self-administered (These questionnaires are completed by the respondents without the researcher interrupting them) or interviewed administered (These questionnaires are recorded by the researcher on the basis of the respondents' answers e.g. telephone questionnaires).

To test the extent to which online learning impacts on the students' and teachers' perception, a questionnaire was designed to collect data about the perceived degree of importance of each factor within the summarised framework in relation to the respondents' online learning and teaching experiences. In addition, some demographic data were also collected from the respondents. Therefore all four types of data were collected in this survey: attribute, belief, attitude and behaviour. Keeping the different factors in mind (the time available to complete the data collection, availability of interviewer and ease of automating data entry) a self-administered questionnaire was designed to distribute to the sample through email (teachers) and in hand (students). The questionnaire collected both quantitative and qualitative data through closed and open-ended questions. A closed question is generally easier to analyse as well as quick and easy to answer. However, in order to fully investigate a variety of topics without biasing the responses by presenting a limited number of response choices, the questionnaire also had some open-ended questions.

Nominal Groups: The Nominal Group technique (NGT) was originally developed by Delbecq and VandeVen (Delbecq and VandeVen, 1971) and has been applied to adult education program planning by Vedros (Vedros, 1979). "Nominal Group technique is a structured variation of small group discussion methods. The process prevents the domination of discussion by a single person, encourages the more passive group members to participate, and results in a set of prioritized solutions or recommendations" (Sample, 1984). The NGT can be roughly divided into two phases (as suggested by Delbecq):

PHASE 1: IDEA GENERATION

1. People are divided into groups of 5 or 6 and a group leader is chosen.

2. Generation of ideas takes place; it begins with the facilitator stating the problem and giving the participants up to 10 minutes to jot down any initial ideas privately.
3. Have the groups, collect the ideas by sharing them in round-robin fashion

PHASE 2: PRIORITY SETTING

1. Evaluation - Have each person evaluate the ideas and individually and anonymously vote for the best ones
2. Share votes within the group and tabulate. A group report is prepared, showing the ideas receiving the most points.
3. Discussion to clarify ideas and check communication is encouraged by the facilitator

Delbecq and VandeVen reported a few implications in their study: NGT is a superior process (quality, quantity, and variety) when compared to other processes including brainstorming, NGT reduces inhibitions of participating individuals during spontaneous interaction, NGT is a better way of voting, and NGT is an important strategy in the creative problem solving process. Others have recognized NGT as a consensus-planning tool that helps prioritize issues [Yiu *et al*, 2005; Duggan and Thachenkary, 2004; Dobbie *et al*, 2004].

Nominal Group Technique was used to gather ideas, solutions, and recommendations from students as a part of course evaluation (in all the three Learners' Perspective action research cycles). Its strength lies in the fact that it gives everyone in the team an equal voice in sharing ideas providing balanced participation. There is no evaluation during the process and hence the climate is not a threatening one. Since each individual must identify dimensions on his own, aspects, which never would have been considered, are more likely to be considered.

Interviews: According to Saunders *et al* (2003), interviews may be categorized into three categories:

1. Structured interviews – Use questionnaires based on a predetermined and identical set of questions.

2. Semi structured interviews – The researcher has a list of themes and topics to cover, although these may vary from interview to interview depending upon the organizational context. The order of questions may also be varied depending upon the flow of conversation. Some new questions may also arise due to discussions.

3. Unstructured interviews – These interviews are informal. There is no predetermined list of questions. The interviewee is free to talk about events, behaviour and beliefs in relation to the research topic. This type of interview is also known as informant interview because it's the interviewee's perception, which leads to the conduct of the interview. It is also known as in depth interview because it's used to explore in depth a general area in which the researcher is interested."

After identifying culture as an issue to consider when developing e-learning strategy, the researcher wanted to see if cultural differences are considered when an e-learning course or environment is developed by one culture and used by another. After searching for such courses/projects, a project running in Germnay, (E-Learning System for Water and Environmental Studies (eSWES) is a project initiated by the RWTH University in Aachen, Germany) was identified for further investigation of this issue. A small case study was carried out to understand the role of e-learning in cross border education between two countries (Germany and Egypt) with different cultural, technological, educational and pedagogical background. In this research, unstructured interview was used which helped in ensuring a smooth and friendly atmosphere while taking the interview.

3.5 Reliability, Validity and Ethics

Whatever procedure for collecting data is selected, it should always be examined critically to assess to what extent it is likely to be reliable and valid. **Reliability** is concerned with the question of whether the results of a study are repeatable. To avoid inconsistency in results, the measures chosen should be consistent. The idea of reliability is close to another criteria of research – replication. To assess the reliability of a measure, the procedures that make that measure must be replicable by someone else.

Reliability is essentially a synonym for consistency and replicability over time, over instruments and over groups of respondents. According to LeCompte and Preissle (1993) quantitative research assumes the possibility of replication; if the same methods are used with the same sample then the results should be the same. On the other hand, this is not to say that qualitative research need not strive for replication in generating, refining, comparing and validating constructs. Further, Denzin and Lincoln (1994) suggest that reliability as replicability in qualitative research can be addressed in several ways:

Stability of observations (whether the researcher would have made the same observations and interpretation of these if they had been observed at a different time or in a different place);

Parallel forms (whether the researcher would have made the same observations and interpretations of what had been seen if she had paid attention to other phenomena during the observation);

Inter-rater reliability (whether another observer with the same theoretical framework and observing the same phenomena would have interpreted them in the same way).

There are number of devices for checking the reliability of scales and tests. This research has used *Cronbach's Alpha reliability coefficient* while analysing the questions through SPSS. Likert Scale reliability was assessed using Cronbach's alpha, as it is deemed an accurate method of computing internal consistency estimates and is a widely used method (Polit, Beck, & Hungler, 2001). Cronbach's alpha reliability coefficient normally ranges between 0 and 1. However, there is actually no lower limit to the coefficient. The closer Cronbach's alpha coefficient is to 1.0 the greater the internal consistency of the items in the scale. According to Maruish (1999), alpha coefficients from 0.6 – 0.7 are usually taken to indicate satisfactory reliability, 0.7 – 0.8 indicate good reliability and 0.8 - .95 indicate excellent reliability. When using Likert-type scales it is imperative to calculate and report Cronbach's alpha coefficient for internal consistency reliability for any scales or subscales one may be using.

Validity is an altogether more complex concept. It tells us whether an item measures or describes what it is supposed to measure or describe. Validity can be categorized (Boaz & Ashby, 2004) into:

Internal validity - 'This form of validity relates mainly to the issue of causality.' It raises the question: Can we be sure that a particular perceived reason for a consequence is the genuine one and this consequence is not produced by something else?

External validity - This is concerned with the question of: 'Whether the results of a study can be generalized beyond the specific research context?' It is in this context that the sample selected for the research comes into consideration.

Ethical issues arise at a number of stages in a research and it cannot be ignored as it directly relates to the integrity of the research. According to Diener and Crandall (1978), there are four different areas into which the ethical principles can be divided into. They are:

- *Whether there is any harm to participants:* Any research that is likely to cause any harm to its participants is unacceptable. As Diener and Crandall puts it, Harm can be a physical harm, stress, harm to career prospects or future employment etc. The ethical code says that care should be taken to maintain the confidentiality of the records and anonymity of accounts. If the respondent's identity is to be revealed, the respondent must first be kept aware of the purpose of the information as well as to whom the information will be supplied. The researcher must ensure that the information will not be used for any non-research purposes.

- *Whether there is lack of informed consent:* The issue of informed consent is the most debatable issue in educational research ethics. Informed consent has been defined by Diener and Crandall (1978) as 'the procedures in which individuals choose whether to participate in an investigation after being informed of facts that would be likely to influence their decisions. Many researchers do disguised observation in which the participants are not given the opportunity to refuse to take part in the study. They are involved whether they like it or not. There are serious ethical dangers associated with disguised or covert observation but at

the same time it has some advantages too. For example, research participants may change their behaviour if they know they are being studied. However, these methods violate the principle of informed consent and thus should not be used unless it is impossible to obtain the essential data with some other research method. As Frankfort-Nachmias and Nachmias (1992) note, however, the principle of informed consent should not be made an absolute requirement of all social science research. Although usually desirable, it is not absolutely necessary to studies where no danger or risk is involved. The more serious the risk to research participants, the greater becomes the obligation to obtain informed consent.

- *Whether there is an invasion of privacy:* The third area of ethical concern relates to the invasion of privacy. In this research, when the participants agree to fill the questionnaire, they had the right to refuse to answer any question, which they think may delve into their private lives or cover a topic which they find sensitive and do not want to share it in public, regardless of knowing that the anonymity of the participant will be kept.

- *Whether deception is involved:* Deception occurs when the researchers disguise their research and represent it in a different way. Deception is quite widespread in research because researchers don't want to tell their participants about the research so that they can respond to the questions more naturally.

All of the above given criteria if properly taken into account in a research design, may lead to credibility of the research which will further lead to more belief in the findings. The researcher has kept in mind the different criteria for assessing the quality of educational research, which can be categorised as reliability, replication and validity (Boaz & Ashby, 2004). Research Ethics has also been followed in the research. It was easier to maintain anonymity and report findings in a way that does not allow individuals to be identified. In this research, all the participants were kept aware of the type of research being done and thus were not at all kept in deception. By and large, all the above issues in research have been taken into consideration while designing, conducting and analysing the questionnaire as well as while conducting the nominal groups. This project makes use of both qualitative and quantitative methods aiming at

triangulating the research factors involved to provide useful data for analysis of relevance to the objectives.

Chapter 4 – Teachers' Perspective of e-learning

CHAPTER 4 – TEACHERS' PERSPECTIVE OF E-LEARNING

"We must do more than teach students to 'surf the net', we must also teach them how to make waves"(Shneiderman, 1997)

4.1 Introduction

There has been a rapid growth in distance and online education in the last decade. Many courses taught in a traditional face-to-face format are incorporating one or more elements of online education, including the use of email, bulletin boards, chat rooms, virtual office hours, and online availability of course materials such as slides and links to tutorials which can be termed as blended teaching (Hislop & Atwood, 2000). This trend towards the increased use of e-learning is likely to continue in the future. One of the key stakeholder groups associated with the development process of an e-learning strategy is the teachers. Instructors' abilities to teach online are critical to the quality of online education (Kyong and Curtis, 2006). The beliefs of University teachers can profitably be viewed as part of 'belief systems' (Rokeach 1970; Combs 1982). The relationship between teacher beliefs and practises have never been a clear one, it is reasonable to assume that those who see their role in one way are likely to differ in their practises from colleagues who view their role in some other way. Teacher beliefs heavily influence what is possible or appropriate within particular circumstances and therefore can have a significant impact on the relative success of innovation in a traditional setting (Lockwood and Gooley, 2001). The nature of faculty workload is also changing as faculty members are increasingly expected to utilise online technology to fully or partially deliver education (Coppola, Hiltz, & Rotter, 2002; Smith, Ferguson, & Caris, 2001; Young, 2002). Recent studies have shown that the successful implementation of IT and e-learning technologies depends largely on the attitudes of teachers, who eventually determine how they are used in the classroom. Whitworth (2005) mentions that each stakeholder group brings to the development process (of a technological product, say a VLE) a certain culture, filled with assumptions, values, prior experiences, calculations of costs and benefits. Therefore, each will have different ideas about what will constitute the 'success' or 'failure' of an innovation. There are few studies on instructional support for faculty members (Northrup, 1997; Westbrook and Moon, 1997) and many questions remain unanswered, particularly from the teacher's perspective.

Therefore, this part of the research investigates teachers' attitudes and perceptions towards e-learning technologies and thus identifying critical factors that motivate or inhibit the teachers to incorporate these upcoming technologies into their teaching strategies within higher education. The study evaluates teachers' experiences and perspectives on the use of e-learning technology and how these technologies have impacted on their expectations and what needs to be improved if they are to meet these new expectations. Data collection involved questionnaire surveys of teachers who teach online courses (partially or fully) as well as those who teach on a traditional basis. The research sample was a cohort of teachers at the University of Sheffield.

4.2 Research Questions Revisited

This part of the research aimed to explore the following research questions:

1. What are the experiences of Teachers that have used e-learning?
    - What is the most preferred mode of teaching and learning (traditional classroom based learning, purely online learning or blended learning)?
    - How can the educative efficacy of the E-learning environment be enhanced?
2. What are the motivators and barriers to E-learning for teachers?
3. What measures might be taken to remove or lessen the impact of such identified barriers?

4.3 Participants, Data Collection and Analysis Procedure

The findings of this research are based on a survey designed for teachers who teach online courses (partially or fully) as well as those who teach on a traditional basis at the University of Sheffield. The number of academic staff at the time of the survey being conducted was 1151. The sample size was calculated using the 'sample calculator' developed by Creative Research Systems (1982) (See **Figure 6**). For a population of 1151, the sample size was determined for a confidence interval of 5 and confidence level as 95%. It came out to be 288.

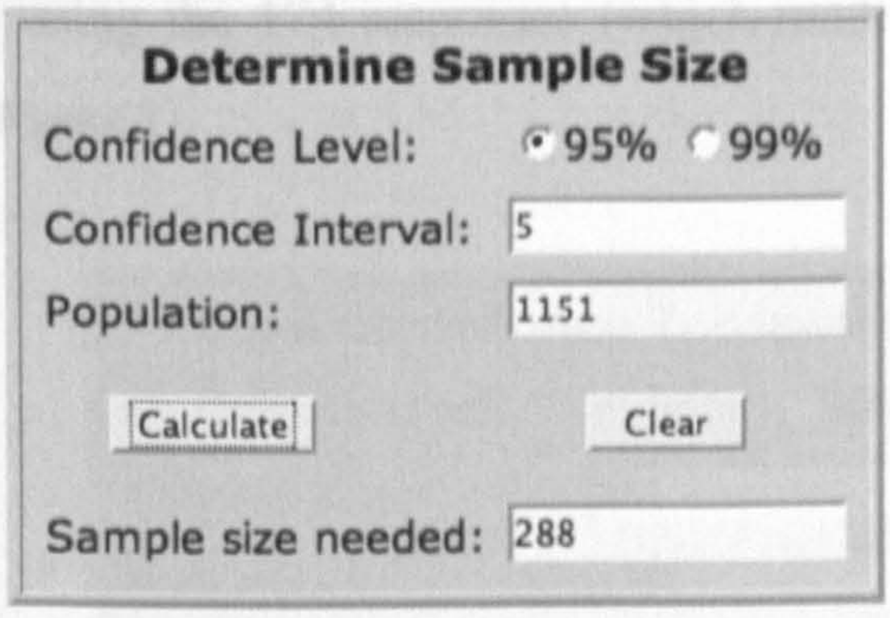

Figure 6 - Sample Size Calculator (Creative Research Systems, 1982)

The procedure used for sample selection was a ''table of random numbers'' (Gay & Airasian, 2000, p. 124). This procedure involved assigning each subject in the population to a number, and then selecting arbitrary numbers from the population. Since each number corresponded to a subject in the population, the selected numbers formed the sample of subjects for the study.

An email was sent to 288 faculty members requesting them to participate in the survey. The e-mail included information about the study, the purpose of the survey and the URL to the survey site. Of the 288 teachers who received the email request, 174 completed the survey making the response rate to be 60%. For the new sample size of 174, confidence interval was calculated using the 'confidence interval calculator' (Creative Research Systems, 1982). There are three factors that determine the size of the confidence interval for a given confidence level (Creative Research Systems, 1982):

- Sample size - The larger the sample size, the more sure you can be that their answers truly reflect the population.
- Percentage - The accuracy also depends on the percentage of the sample that picks a particular answer. If 99% of the sample said, "Yes" and 1% said "No," the chances of error are remote, irrespective of sample size. However, if the percentages are 51% and 49% the chances of error are much greater. When determining the sample size needed for a given level of accuracy you must use the worst-case percentage (50%).
- Population size - How many people are there in the group your sample represents?

The study was analysed using the 174 responses (which made the confidence interval increase from 5 to 6.85 (**Figure 7**).

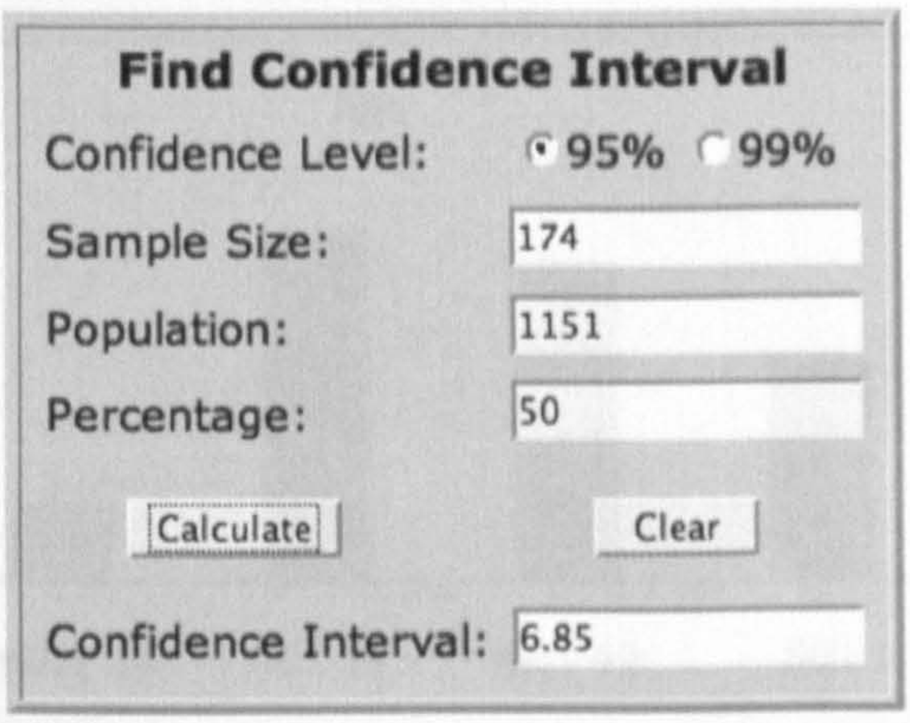

Figure 7- Confidence Interval (Creative Research Systems, 1982)

The closed-ended questions were analysed using the statistical software program Advanced Statistical Package for the Social Sciences (SPSS). The data were analyzed using descriptive and inferential statistics. All of the statistical tests were set at the '0.05' level of significance. Questionnaire contained some free response (open ended) questions to collect qualitative data. Thematic analysis was carried out on the open-ended questions. Major themes were identified, extracted, categorized and quantified.

Instrument Reliability: Likert Scale reliability was assessed using Cronbach's alpha reliability coefficient (as explained in Chapter 3, pp 53).

4.4 Research Findings

The questionnaire was divided into two sections. Section 1 was designed to gather pre-existing teaching preferences and perceived problems and advantages in using ICT tools in teaching; and section 2 was used to gather demographic data. The results indicated several trends in overall components perceived as useful to the teachers when delivering online.

4.4.1 Demographic Data

In total, 174 faculty members responded to the survey. The demographic data of the respondents were as follows: 70 % of the respondents were of the age group 30 – 50, 8% were under 30 years of age and the rest 23% were above 50 years of age (as shown

below in the **Figure 8**). 61% of the respondents were male and the rest 39% were female.

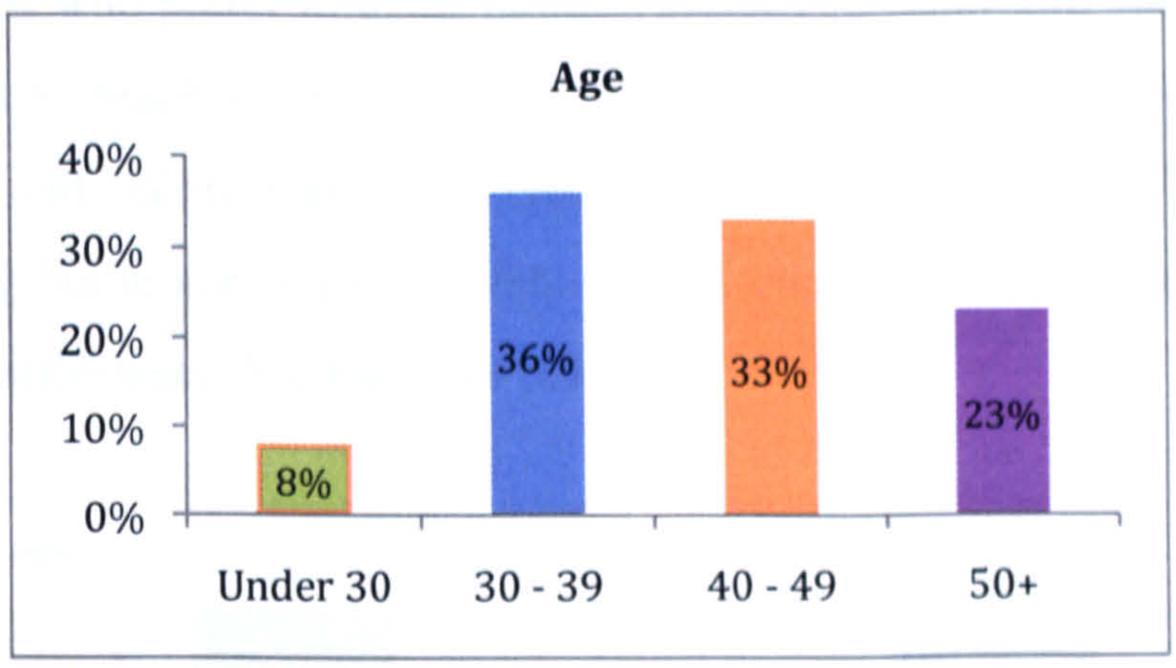

Figure 8 – Teachers' Perspective - Demographic Data (Age) [n=174]

31% of the respondents were from the Faculty of Medicine followed by Social Science (21%) and the Faculty of Arts (17%). A pie graph distribution of the respondents according to their faculties is given below.

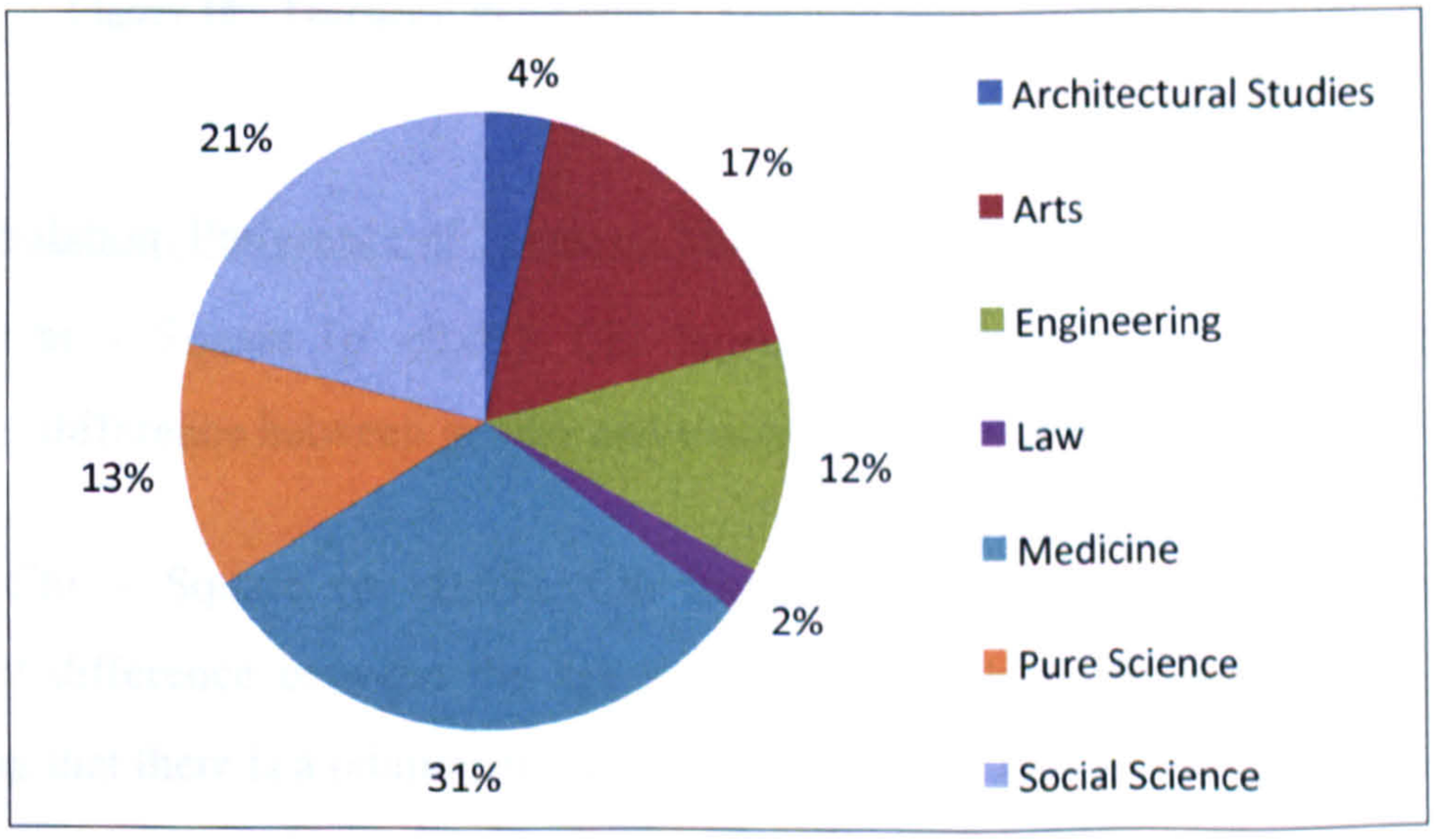

Figure 9 - Teachers' Perspective - Demographic Data (Faculty) [n=174]

4.4.2 Teaching Preferences

This section covered questions on the preference of teaching mode, problems perceived in using ICT tools to deliver courses and advantages or perceived advantages seen by the academicians in using ICT tools to deliver the courses. The section looks into the factors that may predict teachers' preferences and perceptions towards e-learning.

1. In general, what kinds of teaching/delivery mode do you like/prefer?

The results revealed (See **Figure 10**) that there is almost a 50 – 50 % divide between those respondents who prefer to teach through traditional classroom based methods and those who want to teach through blended approach (i.e. a combination of classroom based teaching and online teaching). The response definitely shows a shift towards blended teaching but to accept purely web – based teaching is out of question according to 99% of the respondents (See **Figure 10** below).

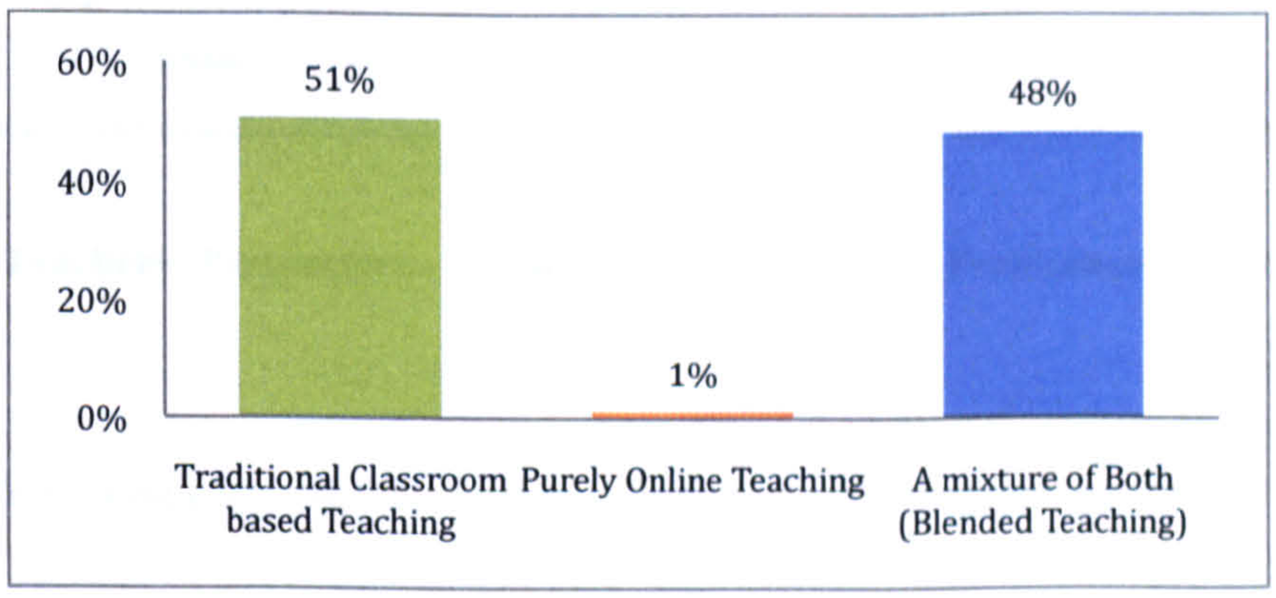

Figure 10 - Teachers' Perspective - Teaching Mode Preference [n=174]

Cross Tabulation: Preference of Teaching Mode Vs Age and Gender

Pearson Chi – Square ($p < 0.05$): Chi Square analysis revealed that there was no significant difference between gender and teaching preferences, ($p = 0.162$).

Pearson Chi – Square ($p < 0.05$): Chi Square analysis revealed that there was a significant difference between the age groups and teaching preferences, ($p = 0.009$), suggesting that there is a relationship between age groups and Teaching Preferences.

Figure 11 shows a strong relationship between age groups and their affinity towards a teaching mode. Teachers of the age group of above 50 were more likely to prefer traditional classroom based teaching over purely web based teaching and blended teaching. There were only two respondents who preferred purely web based teaching (Both under the age of 30). The graph in **Figure 11** shows that as the age increases, the affinity towards classroom based teaching also increases.

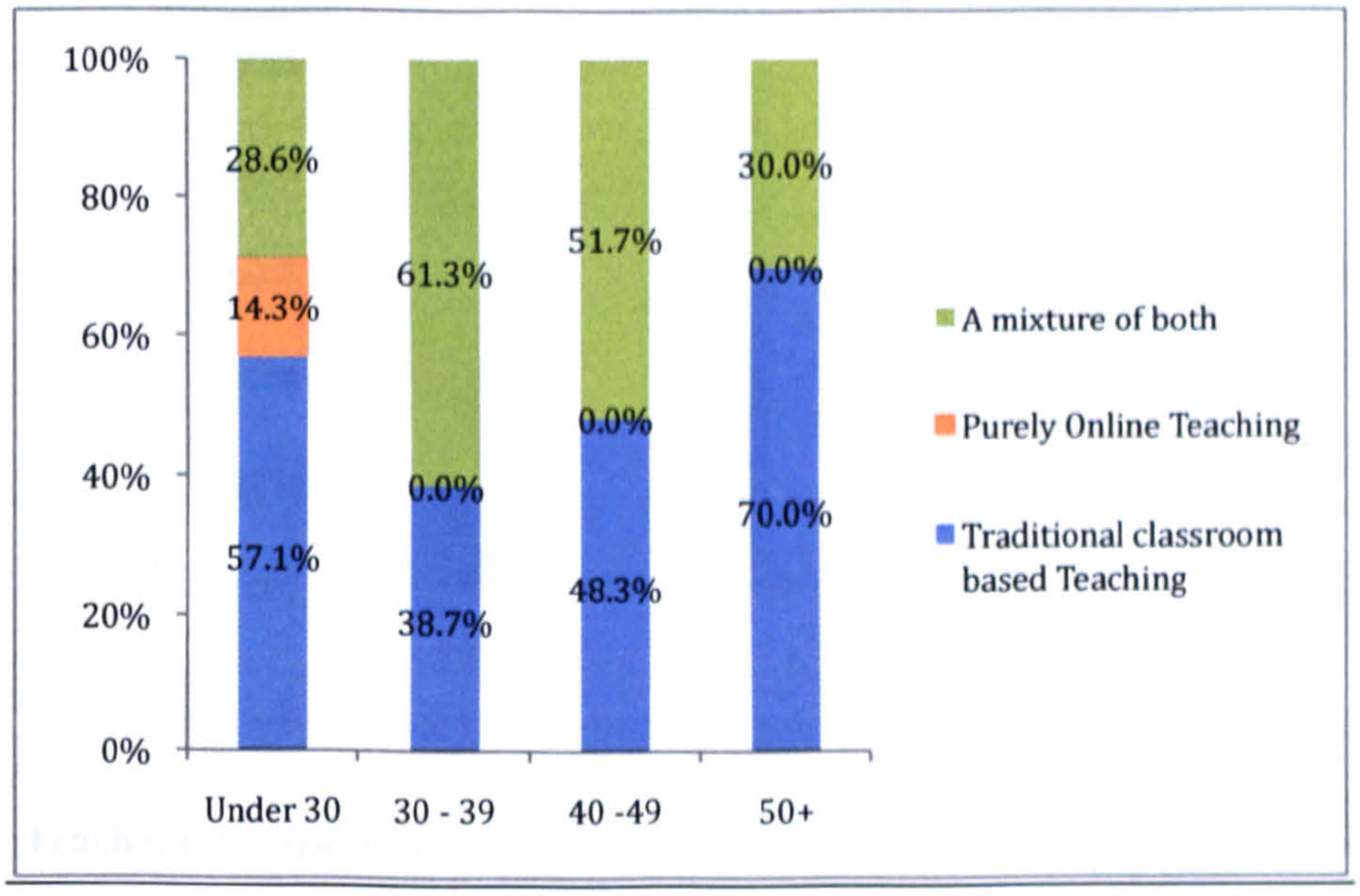

Figure 11 - Teachers' Perspective - Cross Tabulation (Age vs. Preference of teaching mode)

2. Have you delivered any courses online or offered any online support?

57.5 % of the respondents had delivered courses online either partially or fully. The rest 42.5 % had not delivered any course online.

Cross Tabulation: Online Course Delivery vs. Teaching Mode Preference, Age and Gender

Pearson Chi – Square ($p<0.05$): Chi Square analysis revealed that there was no significant relationship between 'gender' and 'online course delivery', ($p = 0.333$).

Pearson Chi – Square ($p<0.05$): Chi Square analysis revealed that there was no significant relationship between 'age groups' and 'online course delivery', ($p = 0.176$).

Pearson Chi – Square ($p <0.05$): Chi Square analysis revealed that there is a statistically significant relationship between 'online course delivery' and 'teaching mode preferences', ($p = 0.04$).

Figure 12 shows that 58% of those respondents who had delivered any course/courses online preferred a blended approach (i.e. a mixture of both traditional classroom teaching and online teaching); while only 35% of those who had not delivered any course online preferred blended approach; the rest 65% preferred traditional classroom teaching.

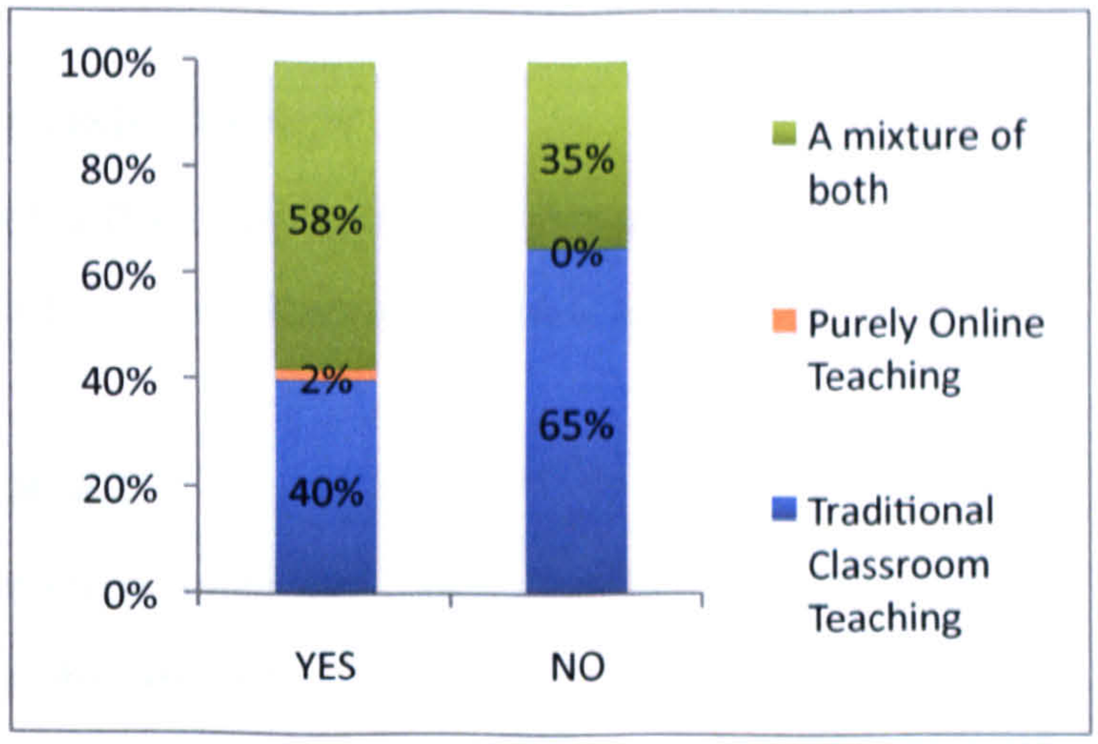

Figure 12 - Teachers' Perspective - Cross Tabulation (Have you delivered any courses online vs. teaching mode preference)

4.4.3 Problems or perceived problems in using ICT tools to deliver courses

What are the problems in using ICT tools/e-learning to deliver your courses?

PART A: Closed Question Results (Descriptive and Inferential Analysis)

The teachers were asked to rate along a five-point 10-item Likert scale (where "1"= strongly Agree and "5" = strongly Disagree) the problems or perceived problems in using ICT tools to deliver courses. The 10-item scale was divided into 5 factors. They are given below:

TIME

1. Online courses require more time to plan and prepare than traditional courses.
2. Written communication (for providing feedback etc) is time consuming.

INSTITUTIONAL BARRIER

1. Lack of instructional and technical support services from the institution (course redesign, training in the use and application of web based technologies.)
2. Lack of resources and infrastructure (Computer, Software, Systems, Internet accessibility) from the institution.

COMPUTER COMPETENCY

1. I am not sufficiently computer literate.
2. I do not have computer and Internet accessibility.

STUDENTS' ROLE

1. Lack of enthusiasm and motivation from the students.
2. Most of the students are not sufficiently computer literate.

COMMUNICATION

1. I like to clarify problems face to face rather than through e-mails or discussion forums.
2. In online medium one looses the impact of body language and facial expressions which normally aid communication.

Cronbach's coefficient alpha was used to assess scale internal reliability for the Likert scale used to collect data on the variable of interest (problems perceived). The Cronbach's Alpha Value for the Likert scale came out to be 0.733. The high alpha reliability gives a support for questionnaire content reliability.

Kolmogorov-Smirnov (K-S) normality test was done to assess the normality of the distribution of scores. P-value came out to be 0.003 ($p<0.05$); thus the data normality assumption was rejected. Therefore, non-parametric tests were used to analyse the Likert data (data distribution not being normal). A detailed breakdown (with mean, mode, median and percentages) of the teachers' attitudes towards e learning is shown in **Table 1.** (*Label meanings: TIME – Time, INST – Institutional Barrier, COMP – Computer Competency, STU – Student' role, COMM – Communication)*

Table 1 – Teachers' Perspective - Perceived Problems

Problems or perceived problems in using ICT tools to deliver courses.	LABEL	Mode	Median	Mean	Std. Dev	Agreement (%)
Online courses require more time to plan and prepare than traditional courses.	TIME	2	2	2.30	.998	**60.9** (11.5 D, 27.6 N)
I like to clarify problems face to face rather than through e-mails or discussion forums.	COMM	2	2	2.38	1.000	**57.5** (14.9 D, 27.6 N)
Written communication (for providing feedback etc) is time consuming.	TIME	2	2	2.64	1.096	**62.1** (28.7 D, 9.2 N)
In online medium one looses the impact of body language and facial expressions, which normally aid communication.	COMM	2	3	2.70	1.021	**47.1** (20.6 D, 32.2 N)
Lack of instructional support services from the institution (course redesign, training in the use and application of web based technologies).	INST	3	3	2.85	.968	34.5 (26.4 D, **39.1 N**)
Lack of resources and infrastructure (Computer, Software, Systems, Internet accessibility) required for online courses.	INST	3	3	3.06	0.936	31.0 (32.2 D, **36.8 N**)
Lack of enthusiasm and motivation from the students.	STU	3	3	3.09	.981	24.1 (34.4 D, **41.4 N**)
Most of the students are not sufficiently computer literate.	STU	4	4	3.49	1.137	25.3 **(55 D,** 19.5 N)
I am not sufficiently computer literate.	COMP	4	4	3.67	1.145	19.5 **(65.5 D,** 14.9 N)

I do not have a computer and/or a sufficient Internet accessibility.	COMP	4	4	3.77	.970	11.5 **(68.9 D,** 19.5 N)

Responses with 'mode = 2' (Agree) – The statements with which most of the respondents agreed are given below.

- 61 % agreed or strongly agreed that online courses require more time to plan and prepare than traditional courses.
- 62 % agreed or strongly agreed that written communication (for providing feedback etc) is time consuming.
- 58 % agreed or strongly agreed that they like to clarify problems face to face rather than through e-mails or discussion forums.
- 47% agreed or strongly agreed that in online medium one looses the impact of body language and facial expressions, which normally aid communication.

Responses with 'mode = 3' (Neutral) – The statements with maximum percentages of neutral responses were:

- Lack of resources and infrastructure (Computer, Software, Systems, Internet accessibility) required for online courses (36.8% Neutral).
- Lack of enthusiasm and motivation from the students (41.4% Neutral).
- Lack of Instructional Support from the institution (39.1 % Neutral).

Responses with 'mode = 4' (Disagree) – The statements with which most of the respondents disagreed are given below.

- 69% disagreed or strongly disagreed that they do not have compute/internet accessibility.
- 66 % disagreed or strongly disagreed that they are 'not sufficiently' computer literate'.
- 55% disagreed or strongly disagreed that most of the students are not sufficiently computer literate.

Results from Likert Scale: Out of the five factors (in the Likert scale), there were two factors with which maximum percentage of respondents agreed. One was 'time' and the other was 'communication'. The following table shows the agreement, disagreement or neutral response towards the 10-item scale (based on the five factors).

Table 2 - Teachers' Perspective - Likert Scale (Factors - Problems)

TIME	
1. Online courses require more time to plan and prepare than traditional courses.	*A*
2. Written communication (for providing feedback etc) is time consuming.	*A*
COMMUNICATION	
1. I like to clarify problems face to face rather than through e-mails or discussion forums.	*A*
2. In online medium one looses the impact of body language and facial expressions, which normally aid communication.	*A*
INSTITUTIONAL BARRIER	
1. Lack of instructional and technical support services from the institution (course redesign, training in the use and application of web based technologies).	*N*
2. Lack of resources and infrastructure (Computer, Software, Systems, Internet accessibility) from the institution.	*N*
COMPUTER COMPETENCY	
1. I am not sufficiently computer literate.	*D*
2. I do not have computer and Internet accessibility.	*D*
STUDENTS' ROLE	
1. Lack of enthusiasm and motivation from the students.	*N*
2. Most of the students are not sufficiently computer literate and have internet access.	*D*

Kruskal-Wallis Test: Problems Perceived vs. Age

Summing the scores across the ten items created a scale of 'total perceived problems'. The scale had a potential range of 10 to 50. The actual scale range varied from 14 to 44. Kruskal-Wallis Test (non-parametric alternative to ANOVA) was conducted to compare the summated scores on 'total perceived problems' for the different age groups. The results indicate that there were significant differences (p=0.008) in 'total perceived problems' between the four age groups. Further comparisons (after inspecting the mean ranks for the four groups) revealed that the lowest score was for the age group 50+ (72.18) indicating more % of agreement to the perceived problems (1=Strongly Agree, 2= Agree, 3= Neutral, 4 = Disagree, 5 = Strongly Disagree). See **Figure 13** for mean ranks of other age groups.

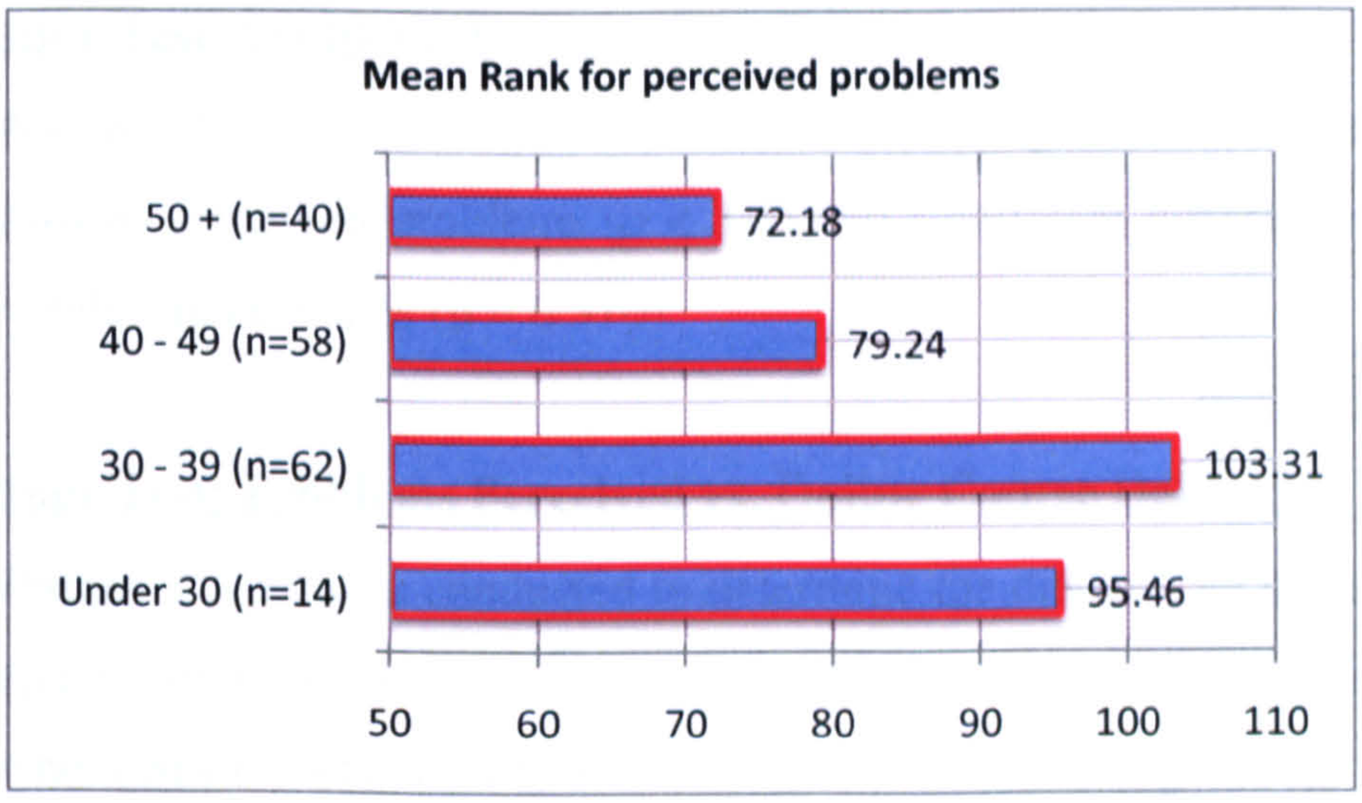

Figure 13 - Teachers' Perspective - Kruskal Wallis (Perceived Problems vs. Age)

Kruskal-Wallis Test: Problems Perceived vs. Teaching Mode Preferences

Kruskal-Wallis Test was conducted to compare the summated scores on 'total perceived problems' for the different 'teaching mode preference' groups. The results indicate that there were significant differences (p=0.000) in 'total perceived problems' between the three groups. Further comparisons (after inspecting the mean ranks for the groups) revealed that the lowest score was for group preferring 'traditional classroom based teaching' (58.44) indicating more % of agreement towards the perceived problems (1=Strongly Agree, 2= Agree, 3= Neutral, 4 = Disagree, 5 = Strongly Disagree). See **Figure 14** for mean ranks of the three groups.

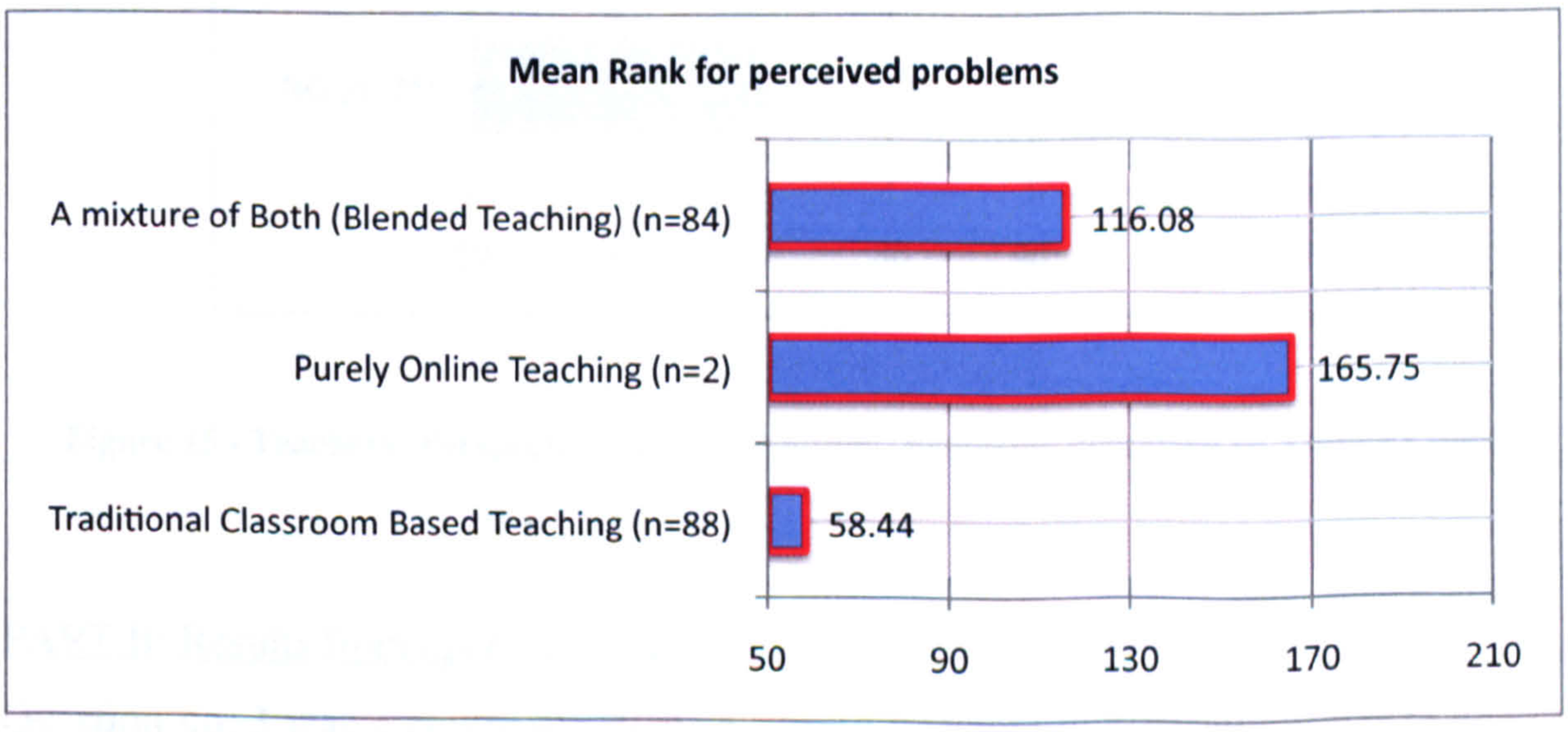

Figure 14 - Teachers' Perspective - Kruskal Wallis (Perceived Problems vs. Teaching Mode Preferences)

Mann Whitney Test: Problems Perceived vs. Gender

A Mann- Whitney U Test was conducted to determine gender differences on the responses towards perceived problems ($p < .05$). No significant difference was found between the males and females (p = 0.510).

Mann Whitney Test: Problems Perceived vs. Online Course Delivery

A Mann- Whitney U Test was conducted to determine the differences in the responses towards perceived problems ($p < .05$) between those who delivered any course online and those who hadn't. The results indicate that there were significant differences (p=0.000) in 'total perceived problems' between the two groups. Further comparisons (after inspecting the mean ranks for the two groups) revealed that the lower score was for the group that had not delivered any course online and thus indicating more % of agreement to the perceived problems (1=Strongly Agree, 2= Agree, 3= Neutral, 4 = Disagree, 5 = Strongly Disagree) than the other group. See **Figure 15** for mean ranks of the two groups.

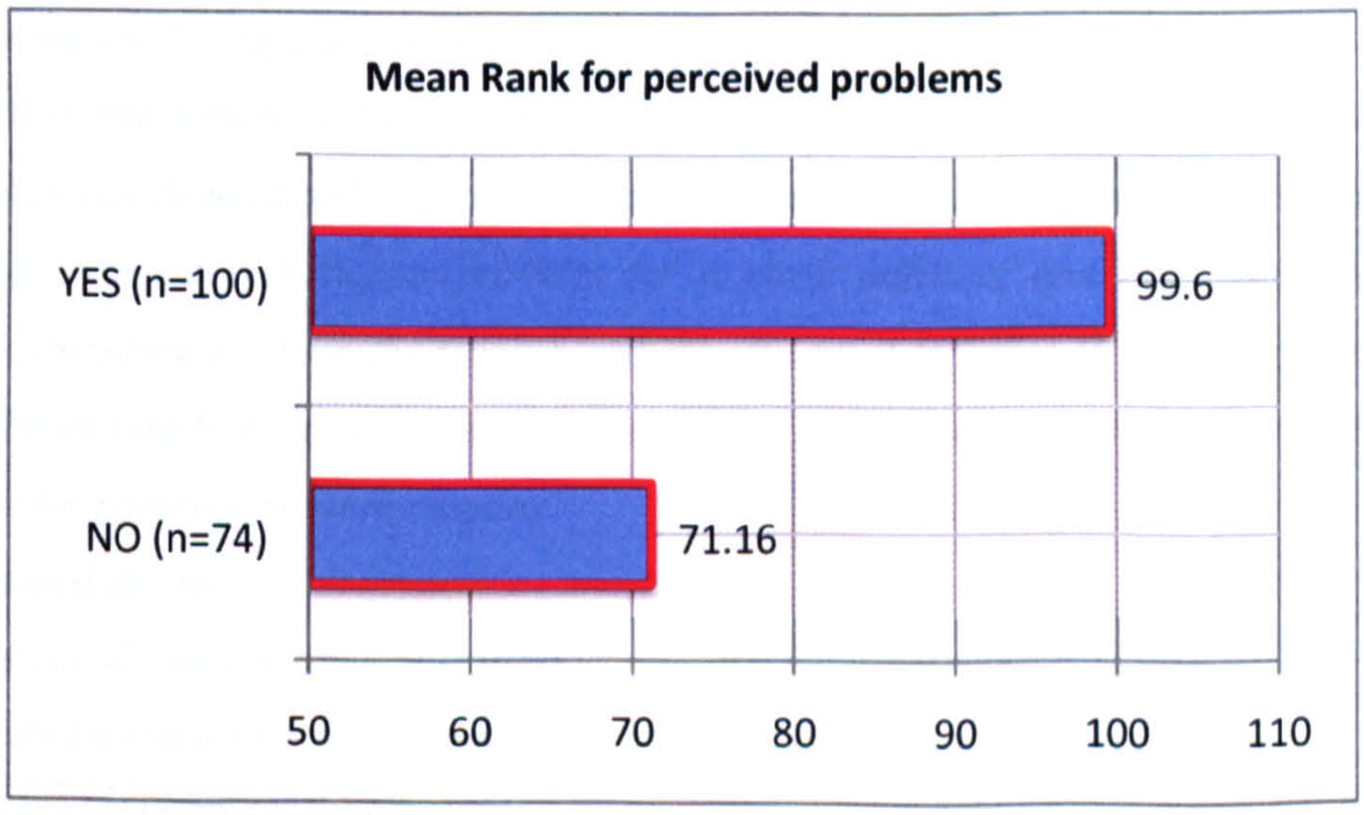

Figure 15 - Teachers' Perspective - Mann Whitney (Problems Perceived vs. Online Course Delivery)

PART B: Results from open-ended questions (Thematic Analysis)

Question no. 3 was a closed question. A closed question is generally easier to analyse as well as quick and easy to answer. However, in order to fully investigate a variety of topics without biasing the responses by presenting a limited number of response choices, an open-ended question was asked to explore the topic further. The respondents were offered the opportunity to respond to this open-ended question

seeking details about the problems faced in an online environment. The respondents had to fill in the box any other problem, which they felt, was not already given in the closed question.

42 responses were received for this question. All the responses along with the codes (generated for thematic analysis) are given in Appendix B. Communication Problems and Lack of institutional support was noted in open-ended question as well. Apart from these two major barriers/problems, most of the responses fall into the following three themes: 'Lack of interactivity and flexibility', 'Time Requirement' and 'VLE problems' (as shown in **Table 3**).

Table 3 - Teachers' Perspective - Thematic Analysis (Problems)

COMMUNICATION PROBLEMS	7/42
• *Language cannot be learnt effectively without actual communication in all media. You can't hold a civilised conversation with a computer.* • *It has its advantages (e.g. distance learning), but I think it is a second-rate way of facilitating learning compared to face-to-face communication.* • *Discussion is much more dynamic face to face than through ICT media. Plus body language and tone of voice can be used and interpreted - and no, emoticons are not a sufficient substitute.* • *Face to face verbal interaction provides for a more fulfilling and informative teaching and learning experience for both the teacher and the student. I feel that IT based systems are always going to be second best in this sense and only suited to those that really cannot be present at the institution for personal or work reasons.* • *Its impersonal at times.* • *Lack of physical clues in communication.* • *Face to face interaction is much better than interaction through the technology.*	
LACK OF INSTITUTIONAL SUPPORT	6/42
• *I am currently looking at producing a grammar course for the language I teach using WebCT, however, there are other pressures to do with my work that make it difficult to move away from traditional teaching (i.e. the requirements of administration for the courses and the publications needed for the RAE). Online courses are a great idea, but it is difficult to do them when your precious time is devoted to doing the job as it is. Teaching languages gets less support than other areas in the university and this is felt in the amount of time that lecturers have to devote to the different areas in their job. If the Arts subjects got more resources, then the ideas that the lecturers working in the Arts faculty have for improving their courses, i.e. online, WebCT courses and, through them, support for teaching, would not be so hard to implement.* • *Lack of technical support and a helpline that addresses problems within a reasonable amount of*	

time (i.e. within a few hours, not days). • *I should be trained before using ICT tools.* • *If students access materials from off-campus, they may not have good enough hardware to support video/audio streaming, large file downloads etc. On campus - not all PCs have earphones - we deliver language programmes, which use audio/video files.* • *Lack of support from the University.* • *A good backbone of technological support from the institution is needed for successful implementation of online courses.*	
LACK OF INTERACTIVITY AND FLEXIBILITY	*5/42*
• *I think more work on its flexibility/scope needs to be done.* • *The learning experience is too passive with students not taking effective notes and believing they can simply rely on material put on websites.* • *E learning needs to be more visually stimulating and interactive.* • *Text dumped on screen is not interactive enough.* • *Potential to loose 'rich variety' of learning experiences.*	
TIME REQUIREMENT	*5/42*
• *It takes time to learn about ICT if you are unfamiliar with it - but a new approach does not necessarily take more time to prepare than traditional approaches once the skills have been acquired.* • *Development of ICT learning facilities can be enormously time-consuming.* • *Lack of time to train myself up for WebCT - could do with a week or so (maybe in the summer).* • *I mainly teach NHS staff and suspect they would find it harder to justify finding time for a web-based course. If they are in the office they might be expected to cover other things at the same time and not give complete attention to the course.* • *Time to develop material.*	
VLE PROBLEMS	*5/42*
• *I had just got used to the old WebCT environment at Sheffield. Then the University changed all its WebCT over to Vista - probably the user-unfriendliest environment ever, with loads of problems. I simply refuse to use it. If they return to the old system I'll probably consider it again. But all this indicates also that if you want to teach online courses, you also have to allow time to learn new VLE's every two years. This is surely not the last time the University will change everything around, and that has put me off. Because the students generally were not enthusiastic or computer literate enough to use the facilities I offered them online, it was all a waste of time.* • *Just when we get the hang of Web-CT, the University changes it to Web-CT Vista, and we have to start learning it all over again! With tools like Web-CT it is not always obvious that someone has e-mailed you with a problem: easier if it turns in your main e-mail box.* • *My main problem is that I really don't like the e-learning environment here in Sheffield (WebCT). I much prefer using Moodle because it is more flexible and suitable for a variety of class types. WebCT really isn't as intuitive. I currently use my own moodle installation on my personal web site - expensive and time-consuming to set up but at least I own it, call the shots and get to use the*	

environment I like - besides, moodle is free! • *The servers at Sheffield are not reliable. I have moved to using WebCT this year and several times the students have not been able to access the material.* • *How to integrate with e-learning provided by 3rd parties and fit in with curriculum of the institution.*	
PRACTICAL AND SOFT SKILLS	*4/42*
• *Some courses require teaching of practical skills or assessment of practical competence, which cannot be achieved without f2f.* • *Can be unnecessarily restrictive within social science disciplines, which are not about 'right' and 'wrong' answers.* • *Some of the modules I teach are about professional competency.* • *Loss of ability to respond dynamically to learning needs.*	

4. Would you try the ICT tools if the reasons in question no. 3 were improved to your satisfaction?

124 respondents completed this question. When asked if they would try the ICT tools (VLE, online material, online support for students, forums etc) (if you have never used any) if the reasons in question no. 3 (Problems Perceived) were improved to their satisfaction; 42% said yes, 47% said 'not sure' while 11 % said 'No'.

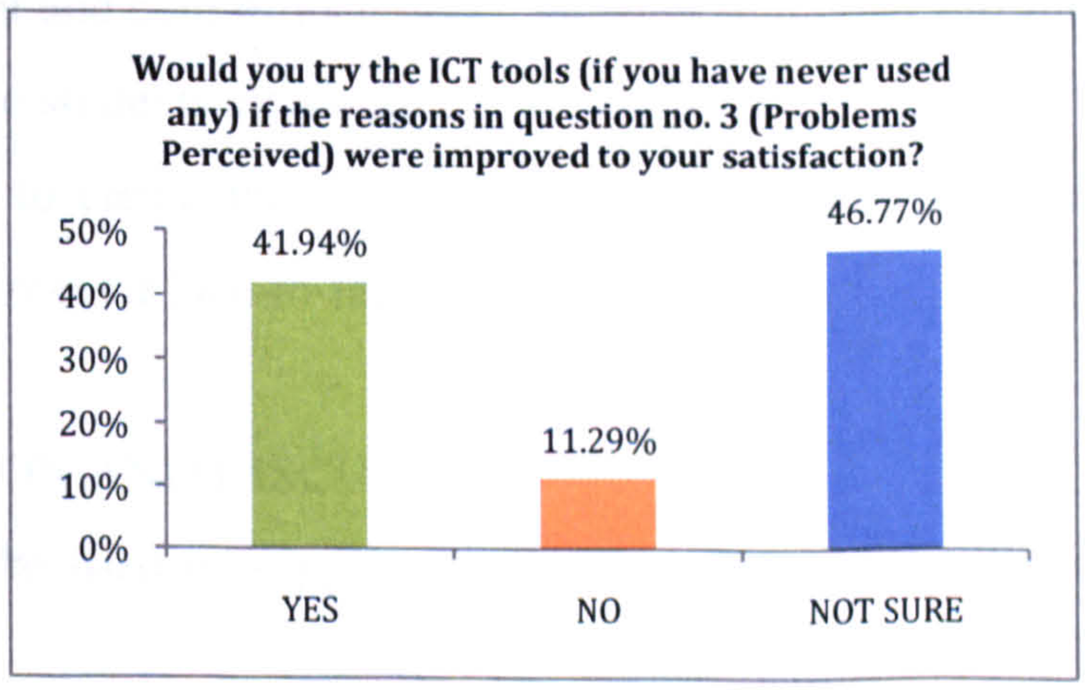

Figure 16 - Teachers' Perspective - Would you try the ICT tools if the reasons in question no. 3 were improved to your satisfaction?

Cross Tabulation: Inclination to shift from traditional classroom based course to ICT based teaching Vs Age and Gender

Pearson Chi – Square ($p < 0.05$): Chi Square analysis revealed that there was no significant difference between age and 'the statement in Q.4' (i.e. if they would try the

ICT tools (VLE, online material, online support for students, forums etc) if the reasons in question no. 3 were improved to their satisfaction).

Pearson Chi – Square ($p < 0.05$): Chi Square analysis revealed that there was no significant difference between gender and 'the statement in Q.4' (i.e. if they would try the ICT tools (VLE, online material, online support for students, forums etc) if the reasons in question no. 3 were improved to their satisfaction).

4.4.4 Advantages or perceived advantages of using ICT tools to deliver your courses

What are the advantages or perceived advantages of using ICT tools/e-learning to deliver your courses?

PART A: Closed Question Results (Descriptive Analysis)

The teachers were asked to rate along a five-point 12-item Likert scale (where "1"= strongly Agree and "5" = strongly Disagree) the advantages or perceived advantages in using ICT tools to deliver courses. The 12-item scale was divided into 6 factors. They are given below:

ACESSIBILITY AND AVAILABILITY

1. Convenient and course documents, lectures, and other information can be made available to students all the time
2. Helps me to create the impression that I am more available to my students outside of regular face-to-face class meetings.

COLLABORATION AND DISCUSSION

1. Web can be used to support small-group discussion using bulletin boards or live chat.
2. The anonymity of online discussion can encourage participation from learners who are not that active in face-to-face discussion.
3. Students can work collaboratively and test their understanding through peer-to-peer discussion.

COMMUNICATION

1. Communication between students and teachers is better through emails and discussion forums.

MONITORING AND ASSESSMENT

1. Students group work is easier to manage and assess using online collaborative tools.
2. Online assessment is easier.

ADVANTAGES FOR STUDENTS

1. Allows me to draw out certain students who otherwise might not speak up in the face-to-face class meetings.
2. Online tools can help the students become more versatile learners with individual learning styles.

TEACHERS' PROFESSIONAL SATISFACTION

1. Using online tools in teaching gives me professional satisfaction.
2. Offers the opportunity to think about teaching in new ways.

Cronbach's coefficient alpha was used to assess scale internal reliability for the Likert scale used to collect data on the variable of interest (advantages perceived). The Cronbach's Alpha Value for the Likert scale came out to be 0.807. The high alpha reliability gives a support for questionnaire content reliability.

Kolmogorov-Smirnov (K-S) normality test was done to assess the normality of the distribution of scores. P-value came out to be 0.027 ($p<0.05$); thus the data normality assumption was rejected. Therefore, non-parametric tests were used to analyse the Likert data (data distribution not being normal). A detailed breakdown (with mean, mode, median and percentages) of the teachers' attitudes towards e learning is shown in the following Table (*Label meanings: ACC – Accessibility and availability, CD – Collaboration and Discussion, STU – Advantages for Students, ASM – Assessment, TEA – Teachers' Professional Satisfaction, COMM – Communication)*

Table 4 - Teachers' Perspective - Advantages of e-learning

Advantages in using ICT tools to deliver courses.	**LABEL**	**Mode**	**Median**	**Mean**	**Std. Dev**	**Agreement (%)**
Convenient and course documents, lectures, and other information can be made available to students all the	ACC	2	2	1.69	.702	88.5 (1.1 D, 10.3 N)

time.						
Web can be used to support small-group discussion using bulletin boards or live chat.	CD	2	2	2.43	.920	59.8 (9.2 D, 31 N)
The anonymity of online discussion can encourage participation from learners who are not that active in face-to-face discussion.	CD	2	3	2.62	.903	47.1 (17.2 D, 35.6 N)
Allows me to draw out certain students who otherwise might not speak up in the face-to-face class meetings.	STU	2	3	2.68	.968	49.4 (23 D, 27.6 N)
Helps me to create the impression that I am more available to my students outside of regular face-to-face class meetings.	ACC	2	3	2.75	.940	46 (24.1 D, 29.9 N)
Students can work collaboratively and test their understanding through peer-to-peer discussion.	CD	3	3	2.76	1.008	42.5 (23.0 D, 34. 5 N)
Students group work is easier to manage and assess using online collaborative tools.	ASM	2	3	2.79	1.000	42.0 (27.6 D, 30.5 N)
Online assessment is easier.	ASM	3	3	2.94	.878	31 (28.7 D, 40.2 N)
Online tools can help the students become more versatile learners with individual learning styles.	STU	3	3	3.02	.804	17.2 (19.5 D, 63.2 N)
Communication between students and teachers is better through emails and discussion forums.	COMM	3	3	3.11	.990	27.6 (36.8 D, 35.6 N)
Using online tools in teaching gives me professional satisfaction.	TEA	4	3	3.41	.968	16.1 (49.4 D, 34.5 N)
Offers the opportunity to think about teaching in new ways.	TEA	3	3	3.44	1.039	17.2 (47.1 D, 35.6 N)

Responses with maximum percentage of agreement – The statements with which most of the respondents agreed (mode = 2, % agreed > 40) are given below.

88 % agreed or strongly agreed that online courses are convenient and course documents, lectures, and other information can be made available to students all the time

60 % agreed or strongly agreed that web can be used to support small-group discussion using bulletin boards or live chat.

47 % agreed or strongly agreed that the anonymity of online discussion can encourage participation from learners who are not that active in face-to-face discussion.

49.4 % agreed or strongly agreed that online courses allows them to draw out certain students who otherwise might not speak up in the face-to-face class meetings.

46 % agreed or strongly agreed that online courses helps them to create the impression that they are more available to their students outside of regular face-to-face class meetings.

42.5 % agreed or strongly agreed that in online courses students can work collaboratively and test their understanding through peer-to-peer discussion. [Mode = 3, but % Agreed was higher than % Neutral or % Disagreed]

42 % agreed or strongly agreed that students' group work is easier to manage and assess using online collaborative tools.

Responses with maximum percentage of neutral - The statements with neutral responses (mode =3, % Neutral > 40) were:

Online assessment is easier. (40.2 % Neutral)

Online tools can help the students become more versatile learners with individual learning styles. (63.2% Neutral)

Responses with maximum percentage of disagreement – The statements with which most of the respondents disagreed (mode = 4, % Disagreed > 40) are given below.

37 % disagreed or strongly disagreed that Communication between students and teachers is better through emails and discussion forums. [Mode = 3, % Disagreed was higher than % Neutral or % Agreed].

50 % disagreed or strongly disagreed that using online tools in teaching gives them professional satisfaction.

47 % disagreed or strongly disagreed that online teaching offers the opportunity to think about teaching in new ways. [Mode = 3, % Disagreed was higher than % Neutral or % Agreed].

Results from Likert Scale: Out of the six factors (in the Likert scale), there were two factors with which maximum percentage of respondents agreed. One was 'accessibility and availability' and the other was 'collaboration and discussion'. The following table shows the agreement, disagreement or neutral response towards the 12-item scale.

Table 5 - Teachers' Perspective - Likert Scale (Factors - Advantages)

ACESSIBILITY AND AVAILABILITY	
1. Convenient and course documents, lectures, and other information can be made available to students all the time	*A*
2. Helps me to create the impression that I am more available to my students outside of regular face-to-face class meetings.	*A*
COLLABORATION AND DISCUSSION	
1. Web can be used to support small-group discussion using bulletin boards or live chat.	*A*
2. The anonymity of online discussion can encourage participation from learners who are not that active in face-to-face discussion.	*A*
3. Students can work collaboratively to identify solutions and test their understanding through peer-to-peer discussion.	*A*
COMMUNICATION	
1. Communication between students and teachers is better through emails and discussion forums.	*D*
MONITORING AND ASSESSMENT	
1. Students group work is easier to manage and assess using online collaborative tools.	*A*
2. Online assessment is easier.	*N*
ADVANTAGES FOR STUDENTS	
1. Allows me to draw out certain students who otherwise might not speak up in the face-to-face class meetings.	*A*
2. Online tools can help the students become more versatile learners with individual learning styles.	*N*
TEACHERS' PROFESSIONAL SATISFACTION	
1. Using online tools in teaching gives me professional satisfaction.	*D*
2. Offers the opportunity to think about teaching in new ways.	*D*

Kruskal-Wallis Test: Perceived Advantages vs. Age

Summing the scores across the twelve items created a scale of 'total perceived advantages'. The scale had a potential range of 12 to 60. The actual scale range was from 12 to 48. Kruskal-Wallis Test (non-parametric alternative to ANOVA) was conducted to compare the summated scores on 'total perceived advantages' for the different age groups. The results indicate that there were significant differences (p=0.002) in 'total perceived advantages' between the four age groups. Further comparisons (after inspecting the mean ranks for the four groups) revealed that the highest score was for the age group 50+ (106) indicating more % of disagreement to the perceived advantages (1=Strongly Agree, 2= Agree, 3= Neutral, 4 = Disagree, 5 = Strongly Disagree). See **Figure 17** for mean ranks of other age groups.

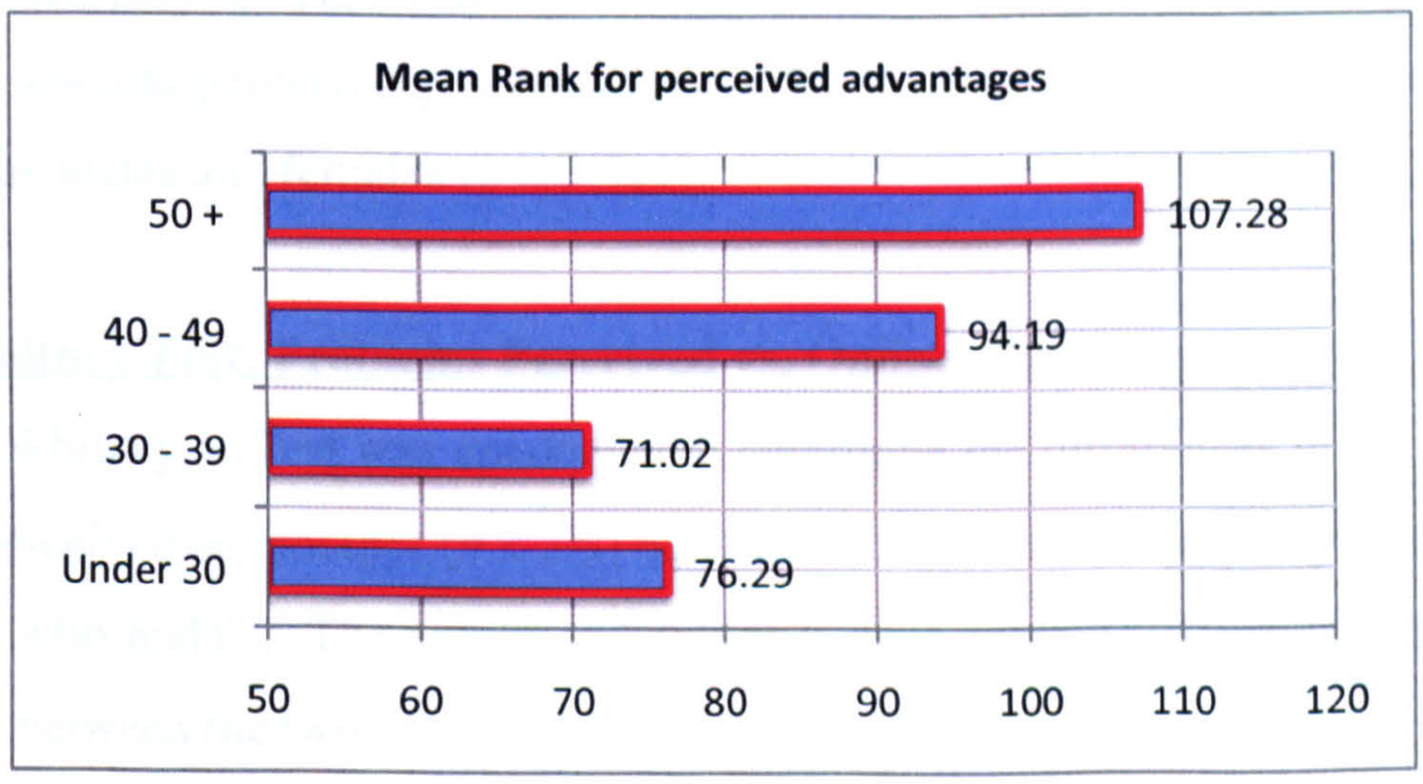

Figure 17 - Teachers' Perspective - Kruskal Wallis (Perceived Advantages vs. Age)

Kruskal-Wallis Test: Advantages Perceived vs. Teaching Mode Preferences

Kruskal-Wallis Test was conducted to compare the summated scores on 'total perceived advantages' for the different 'teaching mode preference' groups. The results indicate that there were significant differences (p=0.000) in 'total perceived advantages' between the three groups. Further comparisons (after inspecting the mean ranks for the groups) revealed that the highest score was for group preferring 'traditional classroom based teaching' (105.64) indicating more % of disagreement towards the perceived advantages (1=Strongly Agree, 2= Agree, 3= Neutral, 4 = Disagree, 5 = Strongly Disagree). See **Figure 18** for mean ranks of the three groups.

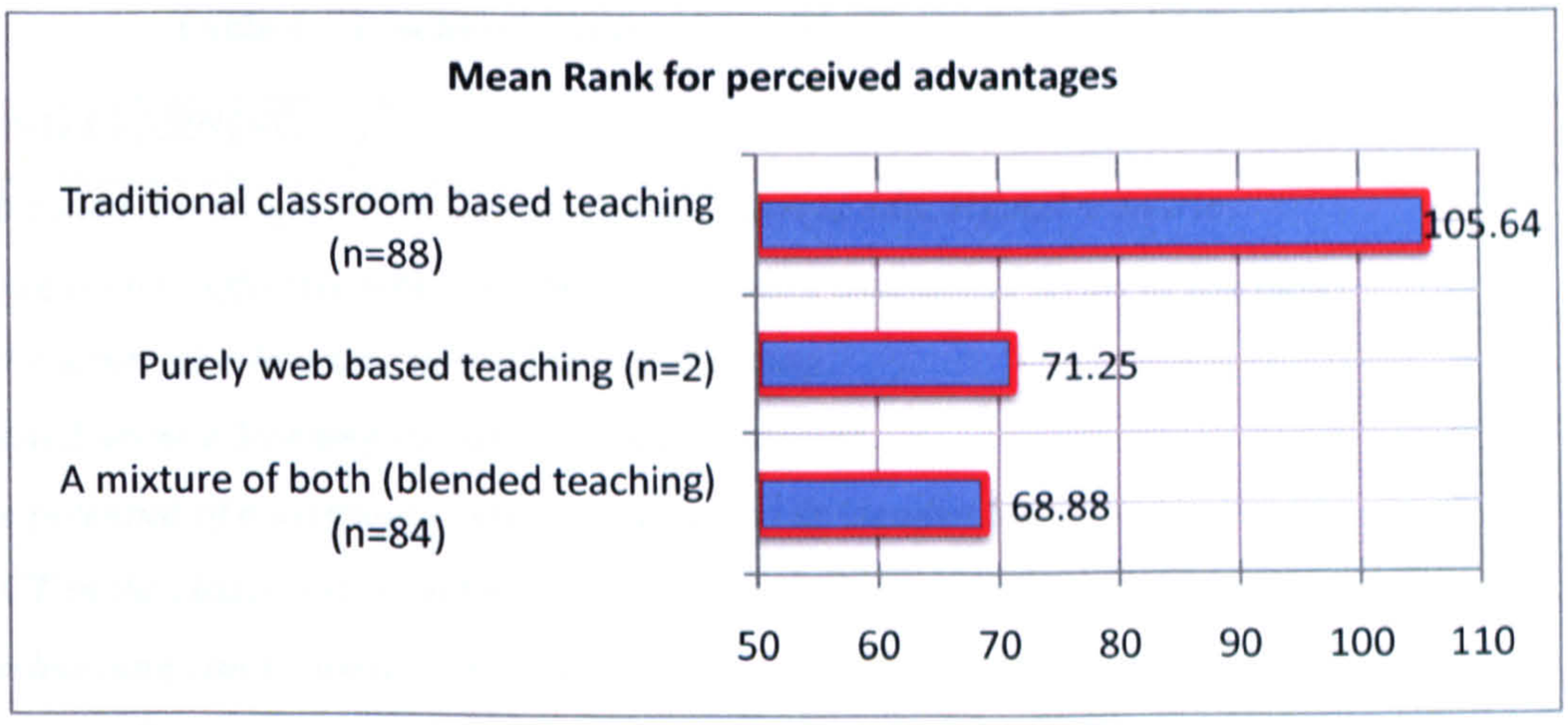

Figure 18 - Teachers' Perspective - Kruskal Wallis (Perceived Advantages vs. Preference of teaching mode)

Mann Whitney Test: Perceived Advantages vs. Gender

A Mann- Whitney U Test was conducted to determine gender differences on the responses towards perceived problems ($p < .05$). No significant difference was found between the males and females ($p = 0.511$).

Mann Whitney Test: Problems Perceived vs. Online Course Delivery

A Mann- Whitney U Test was conducted to determine the differences in the responses towards perceived advantages ($p < .05$) between those who delivered any course online and those who hadn't. The results indicate that there were no significant differences ($p=0.741$) between the two groups.

PART B: Results from Open Question Results (Thematic Analysis)

Question no. 5 was a closed question asking about the advantages of using ICT tools to deliver courses. However, to explore the topic further, the question had a following part (5a), which was open-ended. The respondents had to fill in the box any other advantage, which they felt, was not already given in the closed question. 33 responses were received for this question. All the responses along with the codes (generated for thematic analysis) are given in Appendix C. Most of the responses fall into the following three themes: Blended Learning, Advantageous for students and Accessibility (as shown in **Table 6**).

Table 6 - Teachers' Perspective - Thematic Analysis (Advantages)

BLENDED LEARNING	12/33
I think blended learning is what is needed in the current educational scenario. *E learning is more effective when combined with more traditional forms of learning.* *I think the future of e-learning lies in blended learning.* *I am excited about e learning as part of blended learning.* *The true potential of e learning is seeing it as a part of blended learning.* *Using ICT in the classroom would make the subject matter more interesting.* *I think e-learning can be useful if blended with traditional forms of teaching.* *E-learning media resources can provide more efficient learning when linked to face-to-face sessions in a blended learning programme.* *Blended Learning can offer a wide range of options.*	
ADVANTAGEOUS FOR STUDENTS	8/33
Individual students can be easily supported through different resources on the web. *I can make additional material available for those students who feel they need more practice material or some more background reading.* *Online formative assessment can offer instant feedback, which can be very useful for the students.* *Learners of all types benefit from a variety of activities online.* *E learning is something that students have come to expect in our current technological age.* *Use of multi-media enhances learning experience for students. Students expect us to use technology - using old cassette players/videos seems old-fashioned to many - the use of online learning gives the impression of being more up-to-date in our methods.* *I think computers motivate students to study and learn more.* *Information can be placed online and then accessed in a way, which suits the student - e.g. a student with a disability can access it in a mean appropriate to them. This saves me time in having to personally alter materials.*	
ACCESSIBILITY	8/33
Other methods offer most of these facilities. I have had my materials on the web for some time because the web is a very convenient and accessible repository for such stuff. *Can use freely available on-line e-learning resources like http://www.steeluniversity.org.* *Can do it from home or any other base equipped with internet access.* *Available from multiple locations.* *Geographical distance is no barrier. I successfully mentored a student in California via email and MSN.* *Accessibility of support materials e.g. e-journals, video etc.* *Doesn't require a lecture theatre so can be easier to deliver.* *Basically you can easily reach students through their most commonly used medium. Does not replace class contact though, just augments it, and sometimes adds interest to a minority of students who don't get much out of class based teaching.*	

4.5 Reflection and Discussion

The focus of the study was to investigate the teachers' perspective of e-learning. The research identifies some of the problems and advantages of an e-learning environment as perceived by the teachers that may predict the use e-learning (ICT based courses).

An alarming majority of the teachers (42.5%) had never delivered any course online or provided any online support. The statistical data revealed that there was almost a 50 – 50 % divide between those who prefer to teach through traditional classroom based methods and those who prefer blended approach (i.e. a combination of classroom based teaching and online teaching). The response definitely shows a shift towards blended teaching but to accept purely web – based teaching was out of question according to 99% of the respondents.

Problems of e-learning as perceived by Teachers

From the thematic analysis of the open-ended questions and the descriptive and inferential analysis of the closed questions through SPSS, major barriers to e-learning with respect to teachers were identified as following:

(1) Time Requirement - The extra amount of time required while developing online materials and the amount of time required to learn about Information and Communication Tools was identified as one of the major concern for the teachers. Some of the respondents in the open-ended question indicated their concern over the time required to learn about ICT (if you are unfamiliar with it), the amount of time required to give feedback to the students and the time and effort required to understand WebCT (Blackboard now). Paulsen (2003) puts this in his words as 'Student dreams and teacher nightmares'. He says:

> *"Online education offers students excellent opportunities for individual communication with their tutors. They can be contacted via e-mail 24 hours a day, 365 days a year. Few learning environments provide such opportunities for individual access to teachers. It is obvious that online students appreciate always having a personal tutor available. It is the students' dream, but it could soon become a nightmare for the tutors."*

Thus, it can be clearly identified that the teachers perceive the development and management of online courses to be time – consuming and the immediacy required while responding to student queries creates a heavier workload on teachers.

Recommendation to remove or lessen the impact of this identified barrier

- The never-ending debate on whether online courses require more time to manage/develop and maintain should come to an end now and the teachers should be given more time to integrate technology into their courses.

- Providing the teachers with some kind of expert systems can reduce the amount of time spent in answering queries. One way to understand expert system is to view the instructor's knowledge as an expert system and develop tools to capture and dispense the expert knowledge without depending solely on one-on-one contact with the instructor [So this can manage a lot of queries of the students]. One simple option is that the instructors can develop online FAQ lists similar to those used by technology companies. Adding a search function further enhances the value of this device. Developing a virtual assistant with artificial intelligence software is another approach that combines both a knowledgebase and search function with a natural language interface and graphics that will not only provide the information students require but engage them in a conversational way providing the illusion of a personal dynamic for answering questions about research and academic programs.

(2) *Communication Problem* – Most of the teachers in the survey (58%) stated that they preferred to clarify problems face to face rather than through e-mails or discussion forums. Also lack of body language, facial expressions and physical cues in communication through emails and discussion forums was identified as one of the barriers to e-learning. This was particularly noted in the open-ended questions. Many teachers indicated their concern over the online medium being too impersonal at times. This goes well with what Lockwood and Gooley (2001) said – "*While the WWW has proved an effective medium for the dissemination of flexible learning materials, it has so far lacked the capacity to support complex human interactions and richness of the classroom learning experience*".

Recommendation to remove or lessen the impact of this identified barrier

- Blended Approach - The introduction of a face-to-face alternative (along with the online media - email, conferencing, discussion forums, chats etc) for carrying out discussions and other communication purposes in blended approach can be seen as a significant part of the blended strategy to minimise the 'communication barrier'.
- To combat the problem of lack of physical cues and body language in online teaching, interactivity can be increased in the VLEs that might minimise the communication problem

(3) *Lack of Institutional Support* – Concern for lack of instructional and technical support from the institution was also identified as one of the barriers to e-learning (particularly in the open-ended questions). One teacher specifically mentioned that lack of technical support and a helpline that addresses problems within a reasonable amount of time (i.e. within a few hours, not days) is a major reason to pull back from e-learning. This very well goes with what Gibson and Gibson (1995) found in their study. They argued that the biggest failure in online education might be the failure to adequately train and support the needs of faculty. "*Teachers particularly need to know that they are supported from the top, that there is a collectivist institutional vision with clear leadership, and the institution is committed to flexible learning. Lack of perceived support from the institution can act as major constraints on practises*" (Lockwood and Gooley, 2001).

Recommendation to remove or lessen the impact of this identified barrier

- Levels of motivation and dedication can increase when faculty members get institutional support. Support can be in the form of expert systems, new equipments and more number of support staff to assist the teachers and resolve the problems associated with technological integration. Teachers should be given technical, pedagogical and instructional support from the institution and more time to integrate technology into their courses. Institutional support can be in the form of more support staff at departmental or faculty level. This would mean a paradigm shift in staffing strategies. The institution would need to bring in more Learning Technologists, Instructional Designers and e-learning experts into the institution at departmental level to promote quality in teaching and learning.

Some of the other barriers identified were lack of interactivity and flexibility in the existing e-learning systems, problems with the current VLE (WebCT), and inability to teach soft and practical skills through e-learning. Most of the teachers' felt that the VLE is not interactive and flexible enough. They mentioned that some of the soft skills and practical skills couldn't be taught without face-to-face contact and that the current e-learning system is very passive.

Also cross tabulation results show that

- There were significant differences in 'total perceived problems' between the four age groups (Under 30, 30-39, 40-49 and 50+). Further comparisons revealed that the lowest score was for the age group 50+ indicating more % of agreement to the perceived problems.
- There were significant differences in 'total perceived problems' between the three 'teaching preferences' (traditional classroom based teaching, purely online teaching and blended teaching) groups. Further comparisons revealed that the lowest score was for group preferring 'traditional classroom based teaching' indicating more % of agreement towards the perceived problems.
- There were significant differences in 'total perceived problems' between the two 'online delivery' (those who have already delivered any online course or offered any online support and those who haven't) groups. Further comparisons revealed that the lower score was for the group that had not delivered any course online and thus indicating more % of agreement to the perceived problems.

Advantages of e-learning as perceived by Teachers

From the thematic analysis of the open-ended questions and the descriptive and inferential analysis of the closed questions, major motivators to e-learning with respect to teachers were identified as following:

(1) Availability and Accessibility - Easy access and availability of course materials to the students all the time. Many teachers in the open-ended questions specifically mentioned that (24X7) availability and accessibility of online courses is one of the major reasons for e-learning to be liked by both teachers and learners. Some of the responses were:

Geographical distance is no barrier.

Doesn't require a lecture theatre so can be easier to deliver.

Basically you can easily reach students through their most commonly used medium.

(2) Collaboration and Discussion - Use of online collaborative and discussion tools (discussion forums, collaborative tools like Wiki) in learning was found to be another major advantage of e-learning.

- 42.5 % agreed or strongly agreed that in online courses students can work collaboratively and test their understanding through peer-to-peer discussion.
- 47 % agreed or strongly agreed that the anonymity of online discussion can encourage participation from learners who are not that active in face-to-face discussion.

The benefits to students of collaborative learning was recognised through the survey. Collaborative work around computers provides more social support, cognitive enrichment and task engagement through peer interaction than individual study with computers does (Hoyles, Healy and Pozzi, 1994). Collaborative working online is relatively easier to arrange, manage and monitor using the collaborative tools. In a blended strategy, there may be advantages in conducting part of the collaborative work in the classroom and part online. Traditionally, collaborative work is assessed by the end product, which could be a report, website or a presentation. The collaborative product is submitted as a joint report and it becomes difficult for the teachers to assess individual contribution (in a traditional approach). In a blended environment (with the support of online collaborative tools), it becomes possible to assess the individual contribution to the end product. This is important as members may contribute to the group work in different ways. Assessment of such group work may be based on the following three options (McConnel, 200, p.18):

- *an element for individual learning, e.g. each person's performance used to arrive at an average mark, or other reward for the group;*
- *a cooperative incentive for group learning, where the group reward is based for example on a group product;*

- *an individualistic incentive for individual learning, where individuals are rewarded for individual performance, but within a cooperative working environment.*

(3) Blended - Use of ICT/e-learning tools as part of a blended learning environment. 48% of the respondents stated that they would prefer blended teaching to traditional and purely online teaching. Out of this 48%, 69% were those who had delivered some online courses or offered any online support while 31% were those who had never used any kind of online tools for their teaching. Also, the advantages of using a blended approach in teaching came out in the open ended questions where a majority of respondents saw the advantage of introducing online media into a course, while at the same time recognising that there is a merit in retaining face-to-face contact and other traditional approaches to teaching. This goes well with Laurillard (2002) who says that "*a balance of media is essential to make learning and teaching effective, and the information and communication technology (ICT) element is unlikely to contribute to more than 50% of the total strategy*". HEFCE stated in one of their reports (cited in Jennifer, 2003): Universities are more interested in blended learning involving a mixture of IT, traditional, work based and distance learning, to meet the diverse needs of students, rather than concentrating on wholly electronic learning.

The blended strategy also nullifies (to some extent) one of the barriers (identified) to e-learning- the 'communication' barrier. This barrier was identified as one of the major concerns to the teachers; partly due to the lack of body language and physical cues in online (asynchronous/synchronous) communication through emails, chats or discussion forums. The introduction of a face-to-face alternative (along with the online media - email, conferencing, discussion forums, chats etc) for carrying out discussions and other communication purposes in blended approach can be seen as a significant part of the blended strategy.

(4) Advantageous for Students – Majority of teachers noted that the course material and other information can be made easily available to students and they can make use of it depending on their individual learning style. Learners can have access to the online recourses and learning materials at all times, and they can explore, investigate and research areas of knowledge according to personal preference and interest. 50% of the teachers agreed or strongly agreed that e-learning allows them to draw out certain students who otherwise might not speak up in the face-to-face class meetings.

Advantages to students were also noted through the open-ended questions. Some of the responses were:

- *Individual students can be easily supported through different resources on the web*
- *I can make additional material available for those students who feel they need more practice material or some more background reading.*
- *Online formative assessment can offer instant feedback, which can be very useful for the students.*
- *Learners of all types benefit from a variety of activities online.*
- *Use of multi-media enhances learning experience for students.*
- *I think computers motivate students to study and learn more.*
- *Information can be placed online and then accessed in a way, which suits the student.*

Also cross tabulation results show that

- There were significant differences in 'total perceived advantages' between the four age groups (Under 30, 30-39, 40-49 and 50+). Further comparisons revealed that the highest score was for the age group 50+ indicating more % of disagreement to the perceived advantages.
- There were significant differences in 'total perceived advantages' between the three 'teaching preferences' (traditional classroom based teaching, purely online teaching and blended teaching) groups. Further comparisons revealed that the highest score was for group preferring 'traditional classroom based teaching' indicating more % of disagreement towards the perceived advantages.

4.6 Conclusion

Teachers in the study were able to identify the advantages and usefulness of e-learning and this clearly shows that the utility of e-learning for educational productivity is in the evolving stage. The teachers identified the following advantages of using ICT/online/technological tools in their teaching:

- *Accessibility and Availability* - Easy access and availability of course materials to the students all the time.

- *Collaboration and Discussion* - Use of online collaborative and discussion tools (discussion forums, collaborative tools like Wiki) in learning
- *Blended Learning* - Use of ICT/e-learning tools as part of a blended learning environment
- *Advantageous to Learners* - as they have access to the online recourses and learning materials at all times, and they can explore, investigate and research areas of knowledge according to personal preference and interest.

Along with the above advantages, some of the major disadvantages of e-learning/barriers to e-learning that were noted were:

- *Time Requirement* –It was identified that the teachers perceive the development and management of online courses to be time – consuming and the immediacy required while responding to student queries creates a heavier workload on teachers.
- *Communication Problem* – Most of the teachers preferred to clarify problems face to face rather than through e-mails or discussion forums. Also lack of body language, facial expressions and physical cues in communication through emails and discussion forums was identified as one of the barriers to e learning.
- *Lack of Institutional Support* – Concern for lack of instructional and technical support from the institution was also identified as one of the barriers to e-learning (particularly in the open-ended questions).
- Some of the other barriers identified were *lack of interactivity and flexibility* in the existing e-learning systems, *problems with the current VLE (WebCT)*, and *inability to teach soft and practical skills through e-learning*.

It can be concluded that before any kind of technological integration into the education system, first, a change in the perception of teaching with technology should be considered which in turn is related to provision of additional training or resources. According to Salmon's five stage model (Salmon, 2000), teachers should act as e-moderators in order to promote constructivist online learning. This model progresses through 5 distinct stages starting from access, motivation to community building. It is worth noting here that models like these puts immense pressure on the teachers, as the amount of "moderation" is immense throughout all the five stages. According to Thatch and Murphy (1994), "*there may be as many as eleven roles for faculty*

members who teach at a distance, including instructor, instructional designer, technology expert, technician, administrator, site facilitator, support staff, editor, librarian, evaluation specialist, and graphic designer. Without systematic instructional support from higher education institutions, it is unreasonable to expect them to be prepared to fulfil the roles expected of them."

Teachers should be given some kind of technical and institutional support (or be made aware of the support that is already there but not properly advertised), to increase their levels of motivation and dedication towards using and integrating information and communication technologies into their teaching. Support can be in the form of expert systems, new equipment and more number of support staff (at departmental level) to assist the teachers and resolve the problems associated with technological integration. This would mean a paradigm shift in staffing strategies. The institution would need to bring in more Learning Technologists, Instructional Designers and e-learning experts into the institution at departmental level to promote quality in teaching and learning. The never-ending debate on whether online courses require more time should come to an end now and the teachers should be given more time to integrate technology into their courses.

An overwhelming acceptance (48%) among respondents to 'blended teaching' have helped us to conclude that classroom based learning has started to give way to blended learning. E-learning and classroom based learning have blended together rather than one ruling out the other as Cross (2000) notes that *'the magic is in the mix'*. Also, the introduction of a face-to-face alternative (along with the online media - email, conferencing, discussion forums, chats etc) for carrying out discussions and other communication purposes in blended approach can be seen as a significant part of the blended strategy to minimise the 'communication barrier'.

Teachers in this study have identified the importance of using e-learning/ICT tools in their teaching specifically because they feel it is advantageous to the students/learners. Learners have access to the online resources and learning materials at all times, and they can explore, investigate and research areas of knowledge according to personal preference and interest. A majority of teachers (50%) agreed that e-learning allows them to draw out certain students who otherwise might not speak up in face-to-face classroom meetings. A majority (more than 50%) of the teachers disagreed that

students are not sufficiently computer literate and that the lack of enthusiasm and motivation from students is a barrier to e-learning. This is what the teachers' perceive of e-learning; it would be interesting to see how do the learners think of e-learning. As Whitworth (2005) mentions that each stakeholder group brings to the development process (of a technological product, say a VLE) a certain culture, filled with assumptions, values, prior experiences, calculations of costs and benefits. Therefore, each will have different ideas about what will constitute the 'success' or 'failure' of an innovation. The next chapter, will therefore, look into the *Learners' Perspective of e-learning* identifying barriers and motivators of e-learning.

Chapter 5 – Learners' Perspective of e-learning

CHAPTER 5 – LEARNERS' PERSPECTIVE OF E-LEARNING

5.1 Introduction

Much of the early use of the Internet and Information and communication technology in teaching has been to automate the existing features like reproduction of the lecture notes on a website or taking a multiple choice questions test online. Even today, most of the online courses are labour-intensive and highly text based. Initial research exploring the potential of online learning has provided some overall insights (Conrad, 2002; Hartley & Bendixen, 2001; Hill, 2002). For example, some sources indicate that online learning enables institutions and/or instructors to reach new learners at a distance, increases convenience, and expands educational opportunities (Hara & Kling, 1999, 2001; Hill, 2002; Hofmann, 2002; Rourke, 2001; Schrum, 2000). Yet, the movement toward online learning is not grounded in compelling empirical evidence that it is effective and/or beneficial for learning (Hannafin *et al* 2003; Song at al 2004).

The constant growth of the Web influences and changes how online courses are designed and implemented. This, in turn, may also change the learners' perceptions of their online experience. Learner's perspectives and experiences can provide an in-depth understanding of the most useful/preferred mode of learning (e-learning, classroom/traditional based learning, blended learning) by the learners. Continued studies of learners' perspectives of online learning environments are needed in order to build more effective instructional strategies that can optimise the learning experience within this new era of education. With the rapid growth in distance-delivered learning and the use of emerging technologies, research-involving distance learning students and/or online courses is also needed to determine the usefulness of such environments.

Therefore, the purpose of this study is to explore the learners' perspectives of e-learning identifying barriers and motivators of e-learning and recommend ways to improve the educative efficiency of the current e-learning environment.

5.2 Research Questions Revisited

This part of the research aimed to explore the following research questions:

1. What are the experiences of Learners with E-learning?
    a. What is the most preferred mode of learning (traditional classroom based learning, purely online learning or blended learning)?
    b. How can the educative efficacy of the E-learning environment be enhanced?
2. What are the motivators and barriers to E-learning for learners?
3. What measures might be taken to remove or lessen the impact of such identified barriers?

5.3 Participants, Data Collection and Analysis Procedure

A collection of methodologies was used to answer the research questions. Both primary and secondary data were collected for this purpose. The secondary data comprised of data from literature reviewed from books, journals and Internet while the primary data took the form of information/results collected from questionnaires and Nominal Groups

1. Surveys/Questionnaires: Self-Administered Questionnaires were given to Masters Students/RTP Students and Diploma Students at the end of a course who were taught ICT course (now named Health Informatics), which involved both online and traditional classroom teaching and learning (Blended Learning). The questionnaire contained both open ended and closed ended questions. The closed-ended questions were analysed using the statistical software program Advanced Statistical Package for the Social Sciences (SPSS). The data were analysed using descriptive and inferential statistics. All of the statistical tests were set at the '0.05' level of significance. Questionnaire contained some free response (open ended) questions to collect qualitative data. Thematic analysis was carried out on the open-ended questions. Major themes were identified, extracted, categorized and quantified.

2. Nominal Group Technique: Nominal Group Technique was used to gather ideas, solutions, and recommendations from students as a part of course evaluation. One Nominal Group session was organised for each course (for each action research cycle) within two weeks of the completion of the course. The Lecturer introduced the Nominal Group technique to the students and clarified any queries. The same instructions sheets were given to all student groups and the venue for all sessions was the same. Only the students were present during the nominal group sessions and the group participants were self-selective.

Action Research Cycles

For the purpose of this study the overall methodology used was Action Research (Armstead, 1999; Lousberg and Soler, 1998). Action research is a process in which practitioners study problems scientifically so that they can evaluate, improve, and steer decision-making and practice (Corey, 1953 cited in Cohen *et al*, 2000).

The findings of this study are based on the results of the surveys (Questionnaires) and Nominal Groups (described above), which were carried out on two courses in three action research cycles. The following two courses were under the study:

1. Information Management and Other Learning Activities Course (later renamed to Health Informatics Course) - This was a postgraduate level course for Masters students in the School of Clinical Dentistry. This course was also available to the PhD students as a choice for their RTP (Research and Training module).

2. *Health Informatics (Hygiene and Therapy)* - This was a diploma course running in the School of Clinical Dentistry.

In both the courses, the mode of teaching was blended in the sense that the students were offered both face to face classroom teaching and a web environment [Initially for the first cycle LEGA (Learning Environment for Group Activity) which was based on Moodle was used and for the next two cycles WebCT (The University of Sheffield's VLE) was used] which acted as a repository of materials and tasks, online assignments, online assessments and also provided discussion forums. **Figure 19** shows the three action research cycles with the number of respondents (sample size) for the Questionnaire survey for each cycle.

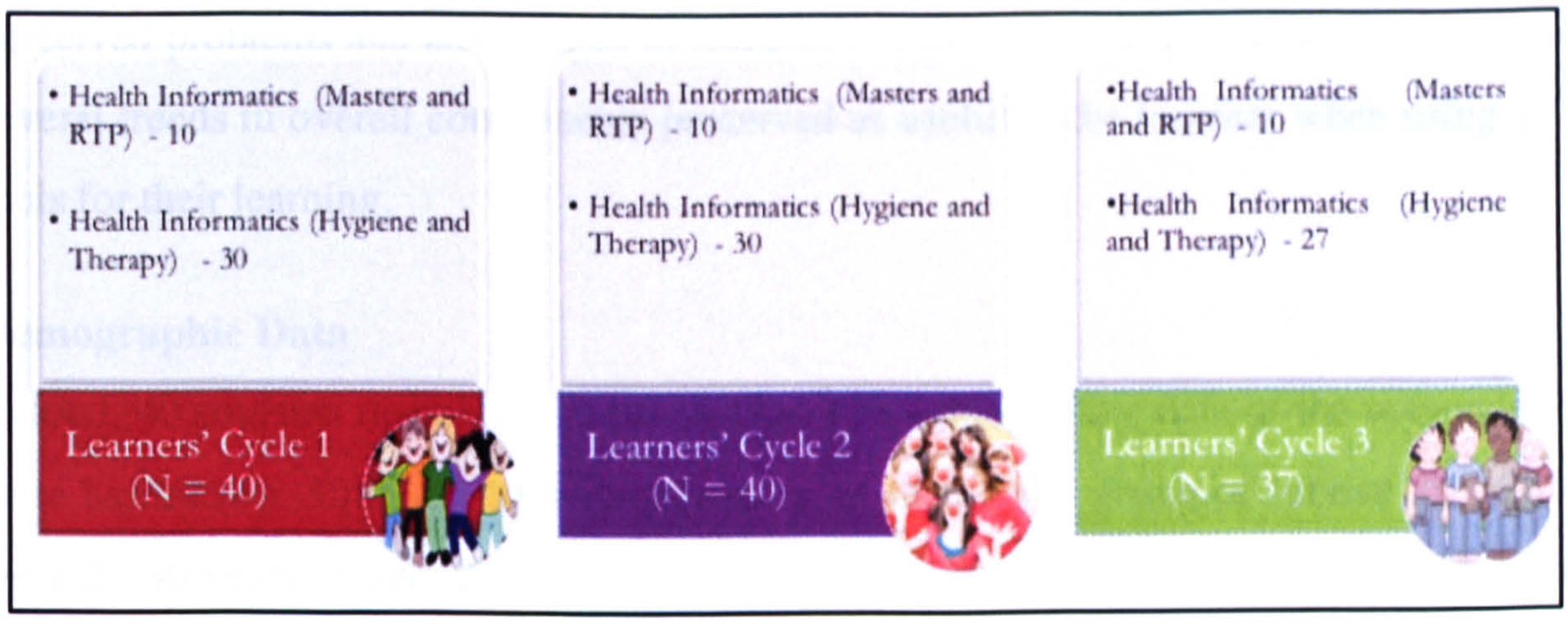

Figure 19 – Learners' Perspective - Action Research Cycles

For the Health Informatics course, the assessment included the following: weekly assignments, which need to be submitted online through the system, one mid-term test conducted online, one final test also conducted online and a group class presentation. To collect material for their presentation the students were asked to engage in active discussions and dialog in their work groups only. While the instructor monitored the group discussions and occasionally interjected to ensure that proper discussion techniques were used and groups were aware that they were being monitored, the discussions were mostly self-managed by members of each group. An evaluation questionnaire was run at the end of the semester. The respondents without the intervention of the researcher completed these self-administered questionnaires. Also one Nominal Group session was organised for each course (for each action research cycle) within two weeks of the completion of the course.

Instrument Reliability: Likert Scale reliability was assessed using Cronbach's alpha reliability coefficient (as explained in Chapter 3, pp 53).

5.4 Research Findings

5.4.1 Action Research Cycle 1 (N=40)

PART A: RESULTS FROM QUESTIONNAIRE SURVEY (CYCLE 1)

The self-administered questionnaire given to the students at the end of the course had seven questions: two questions to collect demographic data (age, gender); three questions to reflect on previous experiences of e-learning (if any) and to gather pre-existing learning preferences; and the remaining two questions to gather perceptions on

perceived problems and advantages in using ICT tools in learning. The results indicated several trends in overall components perceived as useful to the learners when using ICT tools for their learning.

Demographic Data

In total, 40 students responded to the survey. The demographic data of the respondents were as follows: 50 % of the respondents were of the age group of 'above 30', 20% were 26-30 years of age, 27.5% were of the age group '21-25' and the rest 2.5% were under 20 years of age (as shown below in the figure below). 90% of the respondents were Female and the rest 10% were male. This was because a majority of the students doing the 'Diploma in Hygiene and Therapy' course were females. *Therefore, this data has not been used in the analysis for finding statistical difference between males and females (as the numbers were not the same or almost the same) as it may lead to inappropriate results/inferences.*

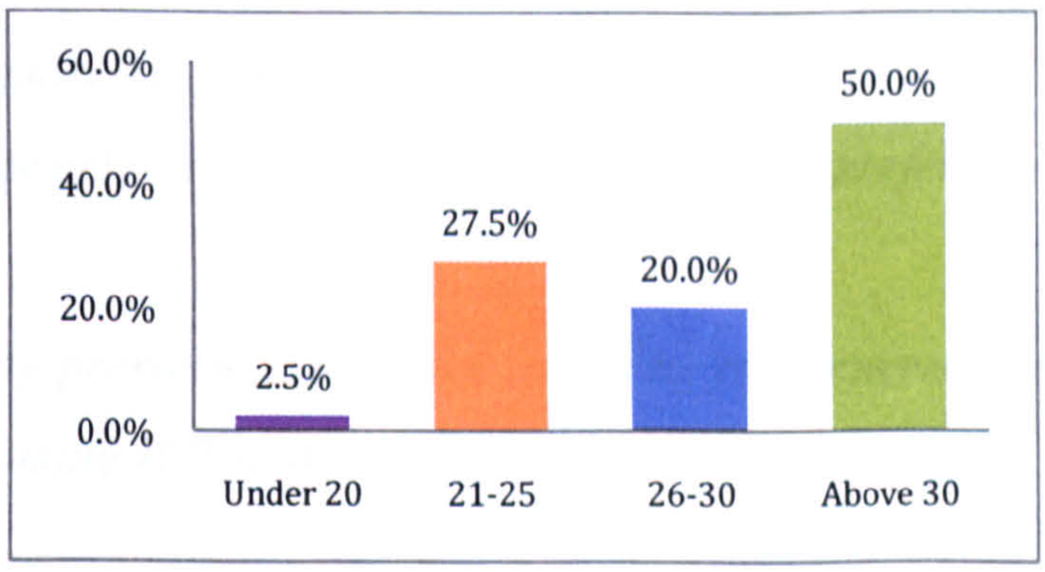

Figure 20 - Learners' Perspective - Demographic Data (Age)

Learning Preferences

This section covered questions on previous experiences of e-learning (if any) and pre-existing learning preferences. The data collected will look into the factors that may predict learners' preferences and perceptions towards e-learning.

1. In general, what kinds of teaching/delivery mode do you like/prefer?

The results revealed (See **Figure 21**) that there is almost a 50 – 50 % divide between those respondents who prefer traditional classroom based methods of learning and those who want to learn through blended approach (i.e. a combination of classroom based teaching and online/e-learning). It was interesting to note that only 2.5% of the

respondents preferred online/e-learning (using ICT tools). The response shows a shift towards blended learning but to accept purely online/e-learning (using ICT tools) was out of question according to 98% of the respondents (See figure below).

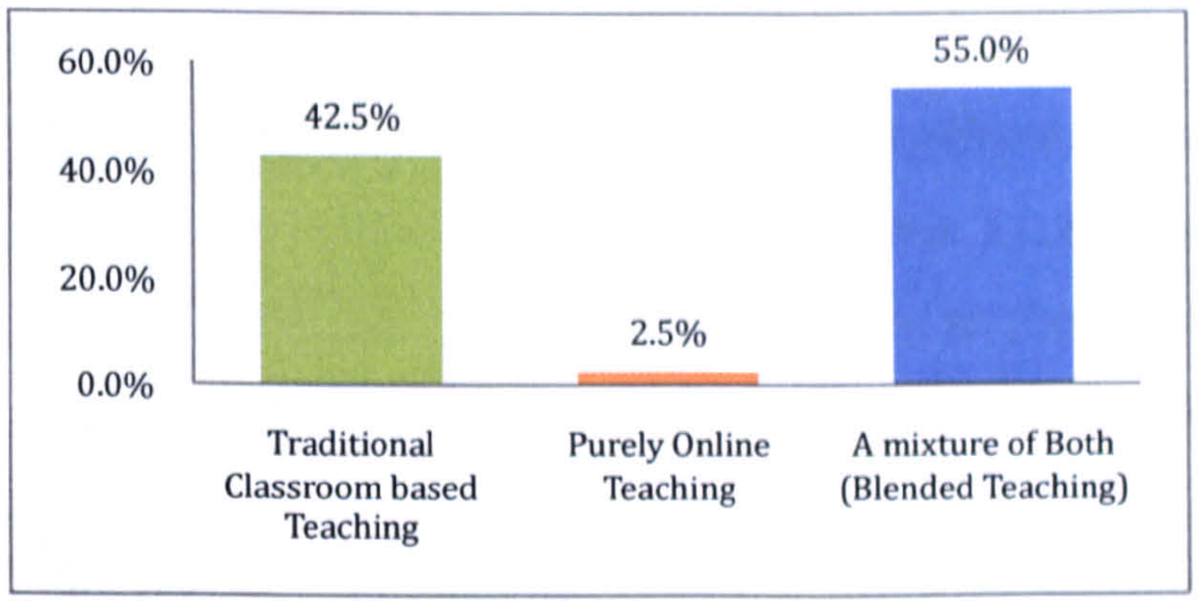

Figure 21 - Learners' Perspective - Learning Mode Preference (Cycle 1)

Cross Tabulation: Preference of Teaching Mode Vs Age

Pearson Chi – Square ($p < 0.05$): Chi Square analysis revealed that there was no significant difference between the age groups and learning preferences, ($p = 0.211$).

2. Do you have any previous experience (prior to your current course in LEGA) in online/e-learning (using ICT tools)?

25 % of the students had a previous experience in online/e-learning. The rest 75 % were new to this online/blended environment.

Cross Tabulation: Previous experience in online/e-learning vs. Teaching Mode Preference and Age

Pearson Chi – Square ($p<0.05$): Chi Square analysis revealed that there was no significant relationship between 'age groups' and 'Previous experience in online/e-learning', ($p = 0.351$).

Pearson Chi – Square ($p < 0.05$): Chi Square analysis revealed that there was no statistically significant relationship between 'Previous experience in online/e-learning' and 'teaching mode preferences', ($p = 0.169$).

Perceived Problems and Advantages in using ICT tools to deliver courses

This section of the questionnaire was designed to gather perceptions on perceived problems and advantages in using ICT tools in learning

1. Problems or perceived problems in using ICT tools to deliver courses

The students were asked to rate along a five-point 7-item Likert scale (where "1"= strongly Agree and "5" = strongly Disagree) the problems or perceived problems of e-learning. The 7-item scale was divided into 3 factors. They are given below:

COMMUNICATION

1. I like to clarify problems face to face rather than through e-mails or discussion forums.
2. In online medium one loses the impact of body language and facial expressions which normally aid communication.
3. Lack of instant/timely feedback in online learning environments.

TIME

1. Written communication is time consuming.
2. Online/e-learning is more time intensive than traditional classroom based learning.

TECHNICAL PROBLEMS

1. Lack of technical support from the institutions.
2. Technical problems associated with computer and online learning environments.

Cronbach's coefficient alpha was used to assess scale internal reliability for the Likert scale used to collect data on the variable of interest (problems perceived). The Cronbach's Alpha Value for the Likert scale came out to be 0.704. The high alpha reliability supports the questionnaire's content reliability.

Table 7 – Learners' Perspective - Perceived Problems

Problems or perceived problems associated with e-learning courses (using ICT tools)	Label	Mode	Median	Mean	Std. Dev	Agreement (%)
I like to clarify problems face to face rather than through e-mails or discussion forums.	COMM	2	2	2.20	.911	67.5 (22.5N, 10.0 D)
Lack of instant/timely feedback.	COMM	2	2	2.22	.974	64.4 (6.6 D, 28.9 N)
In online medium one looses the impact of body language and facial expressions which normally aid communication.	COMM	2	2	2.42	.813	62.5 (25.0 N, 12.0 D)
Written communication is time consuming.	TIME	2	2	2.45	.846	60.0 (30.0 N, 10.0 D)
Technical problems associated with computer and online Learning environments (Lega for this particular course).	TECH	3	3	2.90	1.008	32.5 (45.0 N, 22.5 D)
Online/e-learning is more time intensive than traditional classroom based learning.	TIME	3	3	2.90	.955	27.5 (55.0 N, 17.5 D)
Lack of technical support from the institutions.	TECH	3	3	2.95	.904	32.5 (42.5 N, 25.0 D)

Responses with 'mode = 2' (Agree) – The statements with which most of the respondents agreed are given below.

- I like to clarify problems face to face rather than through e-mails or discussion forums.
- Lack of instant/timely feedback.
- In online medium one loses the impact of body language and facial expressions, which normally aid communication.
- Written communication is time consuming.

Responses with 'mode = 3' (Neutral) – The statements with maximum percentages of neutral responses were:

- Technical problems associated with computer and online learning environments (e.g. Lega for this particular course).

- Online/e-learning is more time intensive than traditional classroom based learning.
- Lack of technical support from the institutions.

Results from Likert Scale: Out of the three factors (in the Likert Scale), there was one factor (Communication) with which maximum percentage of respondents agreed. The following table shows agreement, disagreement or neutral response towards the 7-item scale (based on the three factors).

Table 8 - Learners' Perspective - Perceived Problems (Factors)

COMMUNICATION	
1. I like to clarify problems face to face rather than through e-mails or discussion forums.	*A*
2. In online medium one loses the impact of body language and facial expressions which normally aid communication.	*A*
3. Lack of instant/timely feedback in online learning environments.	*A*
TIME	
1. Written communication is time consuming.	*A*
2. Online/e-learning is more time intensive than traditional classroom based learning.	*N*
TECHNICAL BARRIER	
1. Lack of technical support from the institutions.	*N*
2. Technical problems associated with computer and online learning environments.	*N*

Kruskal-Wallis Test: Problems Perceived vs. Learning Mode Preferences

Summing the scores across the 7 items created a scale of 'total perceived problems'. The scale had a potential range of 7 to 35. The actual scale range varied from 11 to 30. Kruskal-Wallis Test was conducted to compare the summated scores on 'total perceived problems' for the different 'learning mode preference' groups. The results indicate that there were no significant differences ($p=0.336$) in 'total perceived problems' between the three groups. **Table 9** shows the mean ranks of the three groups.

Table 9 - Learners' Perspective - Kruskal Wallis Test (Problems Perceived Vs. Learning Mode preferences)

Ranks			
	In general, what kinds of learning mode do you like/prefer?	N	Mean Rank
Total Score for perceived problems	Traditional classroom based learning	17	17.62
	Purely web based learning	1	16.00
	A mixture of both (blended learning)	22	22.93
	Total	40	

Mann Whitney Test: Problems Perceived vs. Online Course Delivery

A Mann- Whitney U Test was conducted to determine the differences in the responses towards perceived problems ($p < 0.05$) between those who had used ICT tools (e-learning) prior to this course and those who were new to this online environment. The results indicate that there were no significant differences (p=0.269) in 'total perceived problems' between the two groups. **Table 10** shows the mean ranks of the two groups.

Table 10 - Learners' Perspective - Mann Whitney (Problems Perceived vs. 'Previous experience in online learning')

	Do you have any previous experience (prior to your current course in LEGA) in online learning (using ICT tools)?	N	Mean Rank
Total Score for perceived problems	Yes	10	24.00
	No	30	19.33
	Total	40	

2. Advantages or perceived advantages of using ICT tools to deliver your courses

The students were asked to rate along a five-point 12-item Likert scale (where "1"= strongly Agree and "5" = strongly Disagree) the advantages or perceived advantages in

using ICT tools to deliver courses. The 12-item scale was divided into 5 factors. They are given below:

CONSTRUCTIVISM

1. I like the fact that e-learning gives me more control and flexibility over my learning with minimal lecturer input.
2. The Asynchronous environment allows me to write carefully about ideas (encouraging critical reflection).

COLLABORATION, DISCUSSION AND COMMUNICATION

1. Group discussions through discussion forums are convenient and helpful.
2. Group work can be easily managed and organised using online collaborative tools.
3. Online medium can offer the potential for greater equality and participation from shy and passive learners (who are not that active in face-to-face discussion).
4. Communication between staff and students is better through emails and discussion forums.

ACCESSIBILTY AND AVAILABILITY

1. Convenient and course documents, lectures, and other information can be made available to us all the time.
2. Teachers are more available to the students, even outside of regular face-to-face class meetings.
3. Self-paced (Allows me to do my work when I want).
4. E- learning enables communication and collaboration between learners without the barriers of time and place.

ASSESSMENT

1. Online formative assessments (for practice) are very convenient.

INTERACTIVITY

1. Multimedia instructions (videos, audios, simulations, animations etc) are interactive and easier to follow.

Cronbach's coefficient alpha was used to assess scale internal reliability for the Likert scale used to collect data on the variable of interest (advantages perceived). The

Cronbach's Alpha Value for the Likert scale came out to be 0.761. The high alpha reliability gives a support for questionnaire content reliability.

A detailed breakdown (with mean, mode, median and percentages) of the learners' attitudes towards e learning is shown in **Table 11**.

Table 11 - Learners' Perspective - Advantages of e-learning courses

Advantages of e-learning courses (using ICT tools)	**Label**	**Mode**	**Median**	**Mean**	**Std. Dev**	**Agreement (%)**
Convenient and course documents, lectures, and other information can be made available to us all the time.	ACC	2	2	1.98	0.733	75 (25 N)
Online medium can offer the potential for greater equality and participation from shy and passive learners (who are not that active in face-to-face discussion).	COLL	2	2	2.18	0.712	70 (27.5 N, 2.5 D)
E- learning enables communication and collaboration between learners without the barriers of time and place.	ACC	2	2	2.25	.742	62.5 (35 N, 2.5 D)
Asynchronous environment allows me to write carefully about ideas (encouraging critical reflection).	CONS	2	2	2.35	0.700	57.5 (40 N, 2.5 D)
Online formative assessment (for practice) are very convenient.	ASST	3	3	2.52	0.905	45 (42.5 N, 12.5 D)
Self-paced (Allows me to do my work when I want).	ACC	3	3	2.7	0.648	40 (50 N, 10 D)
I like the fact that e-learning gives me more control and flexibility over my learning with minimal lecturer input.	CONS	3	3	2.95	.846	32.5 (37.5 N, 30 D)
Teachers are more available to the students, even outside of regular face-to-face class meetings.	ACC	3	3	2.98	.660	20 (65 N, 15 D)
Multimedia instructions (videos, audios, simulations, animations etc) are interactive and easier to follow.	INT	3	3	3.12	0.723	12.5 (70 N, 17.5)
Group discussions through discussion forums are convenient and helpful.	COLL	4	3	3.35	0.700	12.5 (40 N, 47.5 D)

Group work can be easily managed and organised using online collaborative tools.	COLL	4	3.5	3.35	0.864	20 (30 N, 50 D)
Communication between staff and students is better through emails and discussion forums.	COLL	4	4	3.40	1.033	25 (25 N, 50 D)

Responses with 'mode = 2' (Agree) – The statements with which most of the respondents agreed are given below.

- Convenient and course documents, lectures, and other information can be made available to us all the time.
- Online medium can offer the potential for greater equality and participation from shy and passive learners (who are not that active in face-to-face discussion).
- E- learning enables communication and collaboration between learners without the barriers of time and place.
- Asynchronous environment allows us to write carefully about ideas (encouraging critical reflection).

Responses with 'mode = 3' (Neutral) – The statements with maximum percentages of neutral responses were:

- Online formative assessment (for practice) are very convenient.
- Self-paced (Allows me to do my work when I want).
- I like the fact that e-learning gives me more control and flexibility over my learning with minimal lecturer input.
- Teachers are more available to the students, even outside of regular face-to-face class meetings.
- Multimedia instructions (videos, audios, simulations, animations etc) are interactive and easier to follow.

Responses with 'mode = 4' (Disagree) – The statements with which most of the respondents disagreed are given below -

- Group discussions through discussion forums are convenient and helpful.
- Group work can be easily managed and organised using online collaborative tools.

- Communication between staff and students is better through emails and discussion forums.

Results from Likert Scale: The following table shows agreement, disagreement or neutral response towards the 12-item scale (based on the five factors).

ACCESSIBILITY	
1. Convenient and course documents, lectures, and other information can be made available to us all the time.	*A*
2. Teachers are more available to the students, even outside of regular face-to-face class meetings.	*N*
3. Self-paced (Allows me to do my work when I want).	*N*
4. E- learning enables communication and collaboration between learners without the barriers of time and place.	*A*
COLLABORATION, DISCUSSION AND COMMUNICATION	
1. Group discussions through discussion forums are convenient and helpful.	*D*
2. Group work can be easily managed and organised using online collaborative tools.	*D*
3. Online medium can offer the potential for greater equality and participation from shy and passive learners (who are not that active in face-to-face discussion).	*A*
4. Communication between staff and students is better through emails and discussion forums.	*D*
ASSESSMENT	
1. Online formative assessments (for practice) are very convenient.	*N*
CONSTRUCTIVIM	
1. I like the fact that e-learning gives me more control and flexibility over my learning with minimal lecturer input.	*N*
2. The Asynchronous environment allows me to write carefully about ideas (encouraging critical reflection).	*A*
INTERACTIVITY	
1. Multimedia instructions (videos, audios, simulations, animations etc) are interactive and easier to follow.	*N*

Kruskal-Wallis Test: Advantages Perceived vs. Teaching Mode Preferences

Summing the scores across the twelve items created a scale of 'total perceived advantages'. The scale had a potential range of 12 to 60. The actual scale range was from 12 to 48. Kruskal-Wallis Test was conducted to compare the summated scores on 'total perceived advantages' for the different 'teaching mode preference' groups. The results indicate that there were no significant differences ($p=0.402$) in 'total perceived advantages' between the three groups.

Mann Whitney Test: Problems Perceived vs. Online Course Delivery

A Mann- Whitney U Test was conducted to determine the differences in the responses towards perceived advantages ($p < 0.05$) between those who had a previous experience with online learning and those who didn't. The results indicate that there were no significant differences (p=0.826) between the two groups.

PART B: RESPONSES FROM NOMINAL GROUPS (CYCLE 1)

Nominal Group Technique was used to gather ideas, solutions, and recommendations from students as a part of course evaluation. One Nominal Group session was organised for each course for this action research cycle within two weeks of the completion of the course. The Lecturer introduced the Nominal Group technique to the students and clarified any queries. The same instructions sheets were given to all student groups and the venue for all sessions was the same. Only the students were present during the nominal group sessions and the group participants were self-selective. The following figure shows some images of the evaluation sheets returned by the students. All the evaluation sheets returned by the students in the Nominal Group is available in Appendix I.

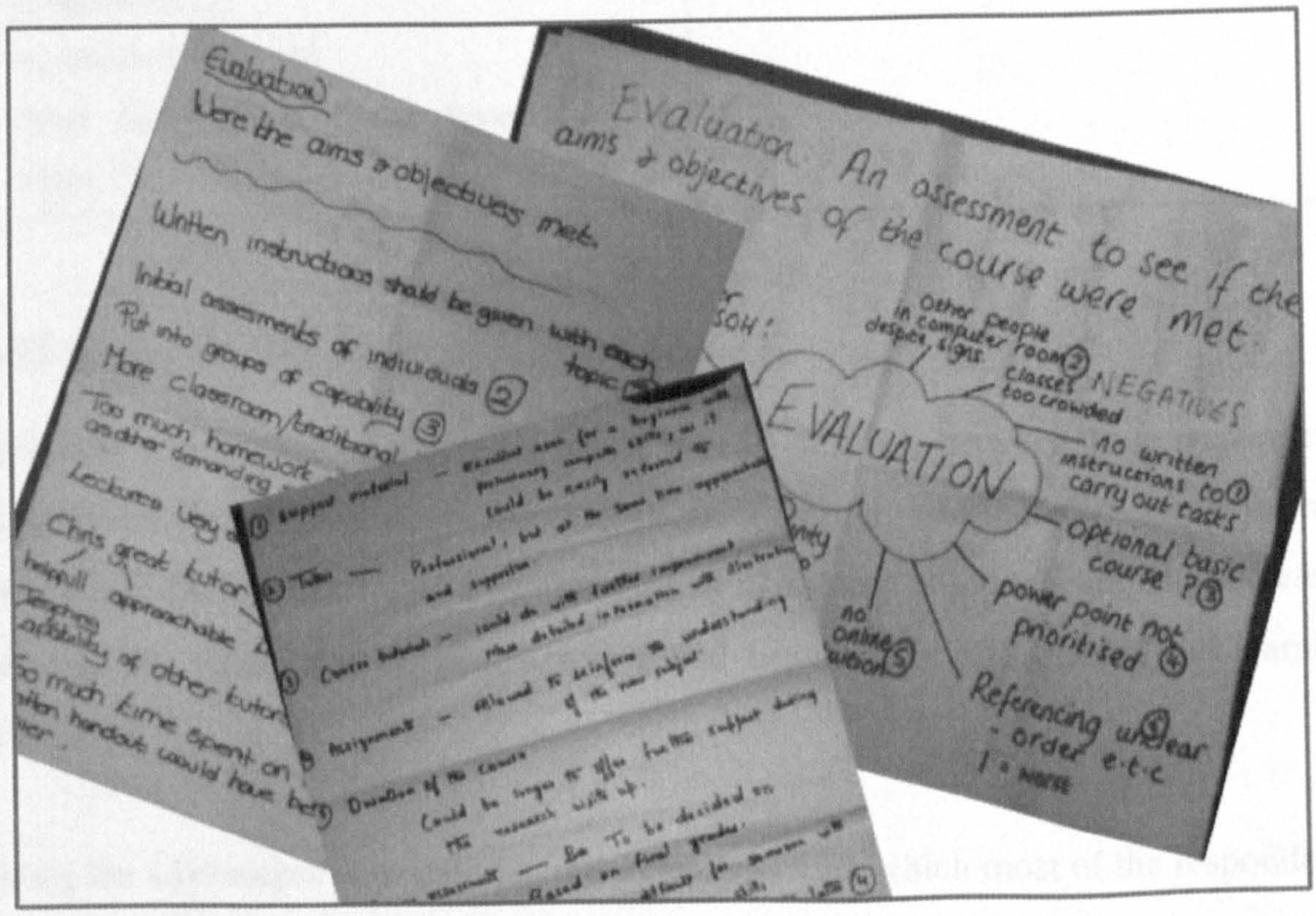

Figure 22 - Nominal Group (Cycle 1)

The following table shows some of the key responses noted from the Nominal Group analysis pertaining to the online aspect of the course. It shows the negatives and positives of the course/e-learning (in general) as identified by the students. The number against every response (in square brackets) is the number given by students to that particular statement (out of 10) – 1 being most important to them.

Table 12 - Key Responses from Nominal Groups (Cycle 1)

Negatives	Positives
1. Access to materials just the same day. [5] 2. No written instructions to carry out tasks. [1] 3. Course tutorials could do further improvement; More detailed information with illustration. [3] 4. Group Interaction – Certain members had difficulties with group efforts. [8] 5. Lack of feedback for tasks. [3] 6. Written instructions should be given with each topic. [5] 7. Have not received feedback of the latter four assignments. [7] 8. No Online Tuition. [5] 9. Other people in Computer Rooms (despite signs); Classes too crowded. [2]	1. Grades available to view. [3] 2. Opportunity to catch up if missed class. [5] 3. LEGA system was very useful. [4] 4. Prompt response through email was nice. [3]

PART C: SUMMARY OF RESULTS (CYCLE 1)

The results revealed that there was almost a 50 – 50 % divide between those respondents who prefer traditional classroom based methods of learning and those who want to learn through blended approach (i.e. a combination of classroom based teaching and online/e-learning). No significant difference was found between the age groups and learning preferences.

Among the advantages of e-learning, the statements with which most of the respondents agreed were (Factors are written in brackets):

- Convenient and course documents, lectures, and other information can be made available to us all the time. [Accessibility]

- Online medium can offer the potential for greater equality and participation from shy and passive learners (who are not that active in face-to-face discussion). [Collaboration]
- E- learning enables communication and collaboration between learners without the barriers of time and place. [Accessibility]
- Asynchronous environment allows us to write carefully about ideas (encouraging critical reflection). [Constructivism]

Apart from the above advantages, a few more advantages of e-learning (pertaining to the online aspect of the course) were identified through the Nominal Group analysis. The students liked the fact that grades were always available to them to view and the fact that online medium allows them to catch up (if missed a class) was noted as a major motivator to like blended learning.

Among the problems of e-learning, the statements with which most of the respondents agreed or strongly agreed were (Factors are written in brackets):

- I like to clarify problems face to face rather than through e-mails or discussion forums. [Communication]
- Lack of instant/timely feedback. [Communication]
- In online medium one loses the impact of body language and facial expressions, which normally aid communication. [Communication]
- Written communication is time consuming. [Communication]

A few problems of e-learning (pertaining to the online aspect of the course) were also identified through the Nominal Group analysis. The course was designed such that the course content (assignments, lecture, handouts etc) was provided (made available) to the students on a weekly basis. The students complained about this in the Nominal Group evaluation and requested for the course content to be provided to them at least a week before so that they can work on their assignments and can have access to the course whenever they want to. The students also complained that there were no written instructions to carry out tasks (assignments); and hence requested for more detailed step-by-step information/written instructions/detailed information with illustration. Lack of timely feedback for assignments was also noted as one of the drawbacks of the course/online part of the course. They also complained of the class being too crowded.

PART D: RECOMMENDATIONS/SUGGESTIONS AFTER CYCLE 1

1. Demonstration by the Lecturer - Since the course under study was a blended course, most of the course material was present online. Therefore, the lecture didn't give a demonstration prior to the class. Many students pointed this out and said that they would prefer the lecturer to give some kind of demonstration or presentation before they actually start doing the assignments. The problem was explained to the lecturer and it was decided to incorporate the change in the next semester classes (Action Research Cycle 2).

2. More online instructions/detailed step-by-step information – The students requested for more detailed step-by-step information/written instructions/detailed information with illustration. This was particularly noted in the nominal group evaluation. This shows that some students still prefer a behaviourist approach to learning (direct instructions) as they are more familiar to direct instructional approach and they need new skills to be confident in seeking out information and finding answers/solutions to their problems by taking responsibility of their learning and by reflecting upon their learning. Thus, a complete shift towards constructivism (as supported by online courses) may not be accepted by all the students and first we need to make them confident in seeking out information, reflecting on their learning and sharing it with others. Constructivism may not be suitable to all subjects and therefore its important to mould the online courses according to the subject matter. The nature of some topics dictate that these need to be taught in an instructional manner. Therefore, as requested more online instructions would be provided in the next cycle.

3. More multimedia instructions (Audios, videos, animations) – Many students requested for more multimedia instructions. Several papers in the literature have also indicated that the online learning experience is enhanced when the web delivery of information is combined with interaction including more multimedia instructions (Berridge et al., 2000; Lechner et al., 1998). This is what actually distinguishes e-publishing from e-learning according to Allen (Allen, 1998). Building in interactivity will make learning more active rather than passive process. This would be incorporated in the course for the next cycle.

4. Flexibility in access of materials – The course was designed such that the course content (assignments, lecture, handouts etc) was provided (made available) to the

students on a weekly basis. The students complained about this in the Nominal Group evaluation and requested for the course content to be provided to them at least a week before so that they can work on their assignments whenever they want to. This would incorporate flexibility in the course and therefore the lecturer took this suggestion into consideration and from next semester onwards the course would be available to the students all the time.

5. Attendance not compulsory – The students complained of the classes being too crowded; therefore, it was suggested (for the next cycle) that they could complete their exercises on their own (purely online learning) and submit their assignments online and if they need any help and support they may come to the sessions (blended learning).

6. Impact of culture – It was observed (analysing the web log of the system -usage pathways, frequency distribution) that the overseas students spent more time online (using and reading the course documents) than the home students. Also 25% of the students (in the questionnaire) agreed to the statement - Communication between staff and students is better through emails and discussion forums. Since, demographic data related to the cultural background was not collected in this cycle (and the questionnaire being anonymous, it was impossible to find out who were those 25% of students), it was decided to do the same in the next cycle and see the differences in the attitude towards e-learning between the home students and overseas students. It would be interesting to note in cycle 2 if the cultural background has an impact on students' perspective of e-learning.

7. Animated Demonstration on the Computer - To see whether the enormous amount of text based information present online discouraged the students from reading it and understanding it (and therefore they asked for a demonstration by the Lecturer), implementation of an online animated demonstration was suggested to the Lecturer. The suggestion was taken up and online demonstrations would produced (for the next semester/next action research cycle).

5.4.2 Action Research Cycle 2 (N=40)

PART A: RESULTS FROM QUESTIONNAIRE SURVEY (CYCLE 2)

The self-administered questionnaire given to the students at the end of the course had nine questions. Three to collect demographic data (age, gender, ethnic background); four

to gather pre-existing learning preferences; and the rest two to gather perceived problems and advantages in using ICT tools in learning. The results indicated several trends in overall components perceived as useful to the learners when using ICT tools for their learning.

Demographic Data

In total, 40 students responded to the survey. The demographic data of the respondents were as follows: 95% of the respondents were home students and the rest 5% were overseas students; 37.5 % of the respondents were of the age group of '26-30' years of age, 45% were of the age group '21-25' and the rest 17.5% were under 20 years of age. 92.5% of the respondents were Female and the rest 7.5% were male. This was because a majority of the students doing the 'Diploma in Hygiene and Therapy' course were females. *Therefore, this data has not been used in the analysis for finding statistical difference between males and females (as the numbers were not the same or almost the same) as it may lead to inappropriate results/inferences.*

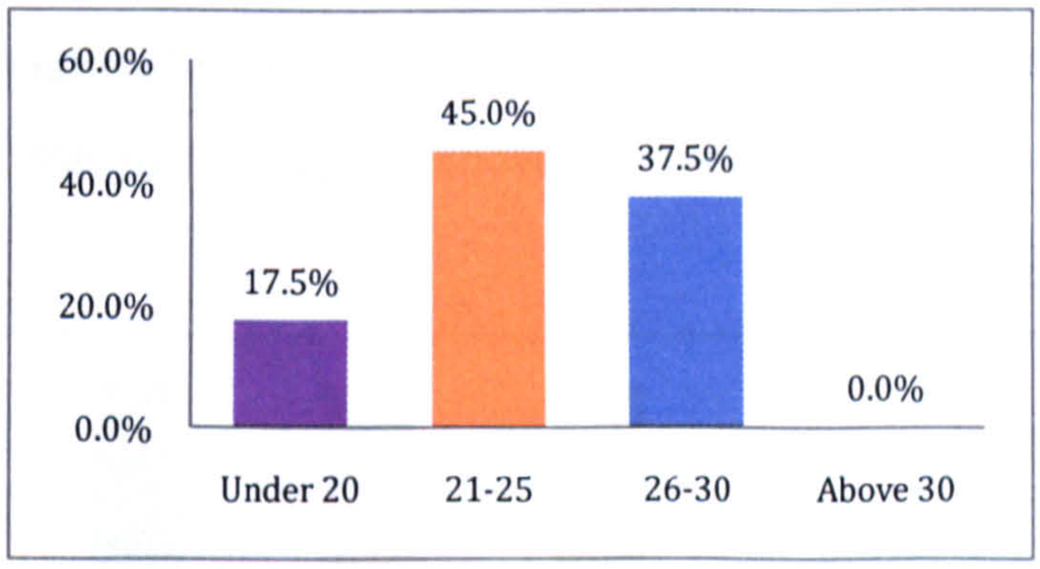

Figure 23 - Learners' Perspective (Age)

Learning Preferences

This section covered questions on previous experiences of e-learning (if any) and pre-existing learning preferences. The data collected will look into the factors that may predict learners' preferences and perceptions towards e-learning.

1. In general, what kinds of teaching/delivery mode do you like/prefer?

The results revealed (See **Figure 24**) that 12.5 % respondents preferred traditional classroom based learning, 2.5 % preferred purely online learning and 85% of the respondents preferred blended learning (a mixture of both). It was interesting to note that

only 2.5% of the respondents preferred online/e-learning (using ICT tools). The response shows a shift towards blended learning but to accept purely online/e-learning (using ICT tools) was out of question according to 98% of the respondents (See **Figure 24** below).

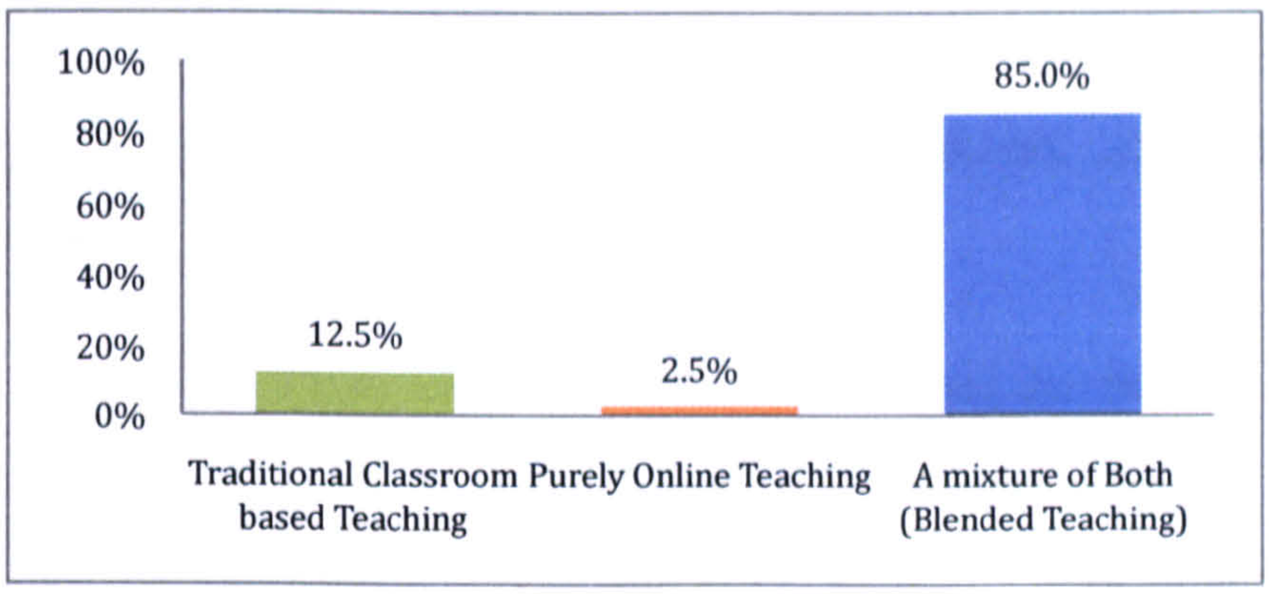

Figure 24 - Learners' Perspective - Learning Mode Preference (Cycle 2)

Cross Tabulation: Preference of Teaching Mode Vs Age

Pearson Chi – Square ($p < 0.05$): Chi Square analysis revealed that there was a significant difference between the age groups and learning preferences, ($p = 0.013$). **Figure 25** shows a relationship between age groups and their affinity towards a learning mode. Students of the age group of above 20 were more likely to prefer blended learning.

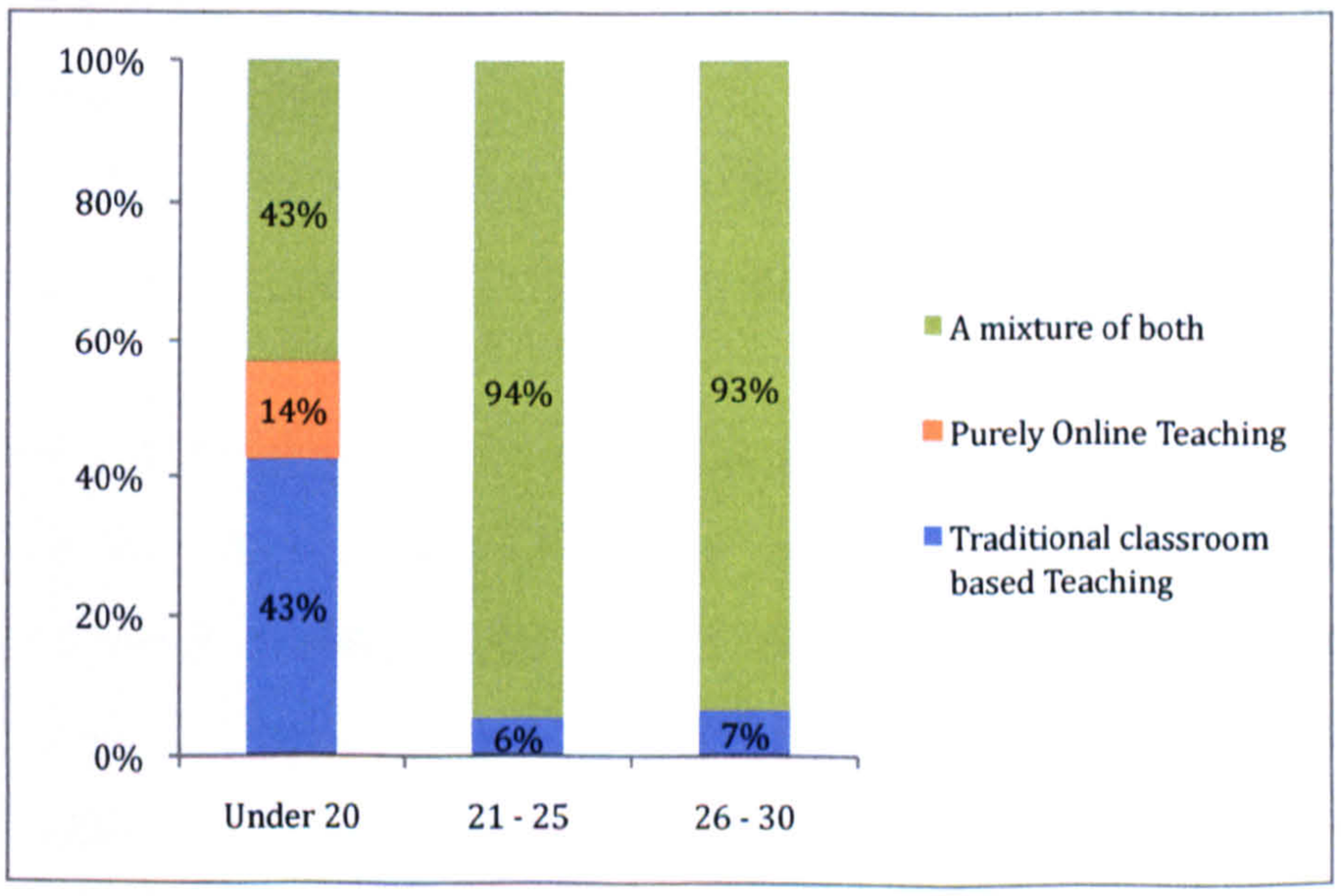

Figure 25 – Learners' Perspective – Cross Tabulation (Age vs. Preference of learning mode)

2. Do you have any previous experience (prior to your current course in LEGA) in online/e-learning (using ICT tools)?

35 % of the students had a previous experience in online/e-learning. The rest 65 % were new to this online/blended environment.

Cross Tabulation: Previous experience in online/e-learning vs. Teaching Mode Preference and age

Pearson Chi – Square ($p < 0.05$): Chi Square analysis revealed that there is no statistically significant relationship between 'Previous experience in online/e-learning' and 'teaching mode preferences', ($p = 0.743$).

Pearson Chi – Square ($p < 0.05$): Chi Square analysis revealed that there is no statistically significant relationship between 'Previous experience in online/e-learning' and 'age', ($p = 0.487$).

3. Imagine that you have the choice of choosing how you are taught in lessons.

You have the choice of:

A. An online text based information about the session (For e.g. as in Excel Part 1)

B. An animated online demonstration (For e.g. animated search example in your finding literature online session.)

C. A face-to-face demonstration/lecture from the lecturer

Options given were: A only, B only, C only, A and B, A and C, B and C

This question was asked to see if the students prefer online animation or face-to-face demonstration as both the approaches were used during the course. 52.5% of the students stated that they would prefer B and C only (An animated online demonstration and a face-to-face demonstration), 17.5% stated A and C only (An online text based information and a face-to-face demonstration), 15% stated C only (a face-to-face demonstration), 7.5% stated A only (An online text based information), 5% stated B only (An animated online demonstration) and 2.5% stated A and B only (An online text based information and an animated online demonstration).

This shows that irrespective of the provision of animated demonstrations, the students still preferred demonstrations by the lecturer to animated one's. Though, animated demonstrations were preferred over text based online instructions or information.

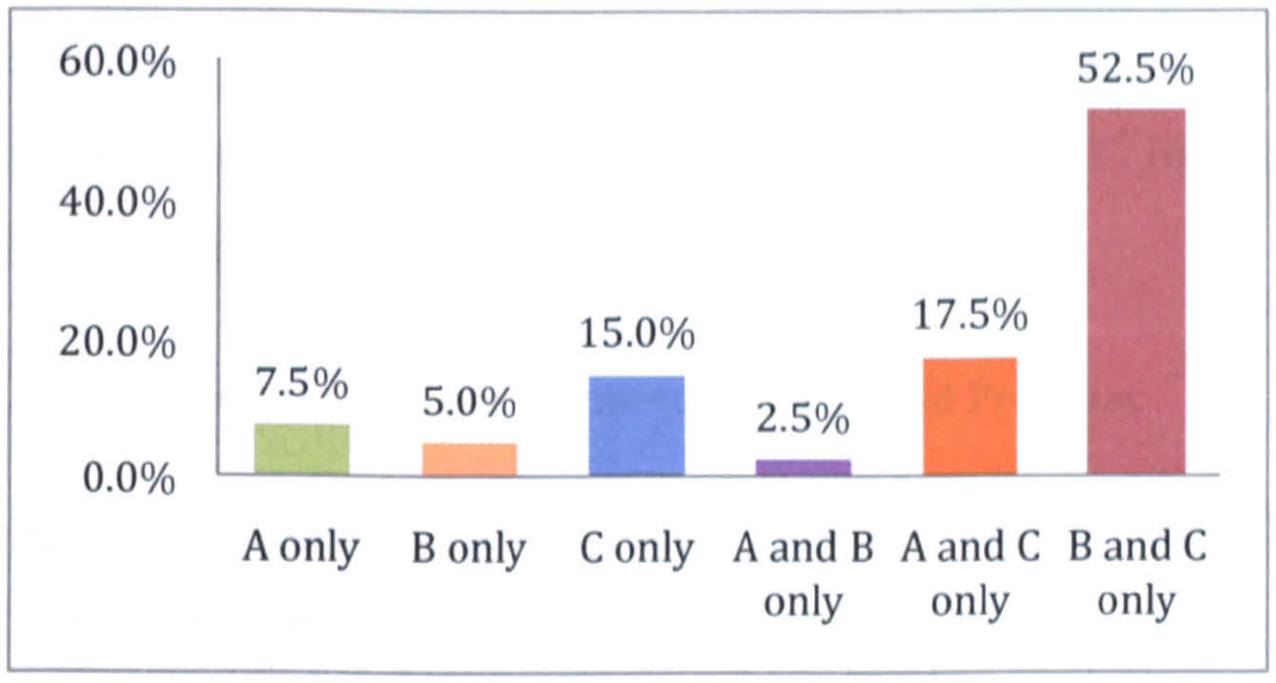

Figure 26 - Learners' Perspective - Animation vs. Demonstration by a Lecturer

Perceived Problems and Advantages in using ICT tools to deliver courses

1. Problems or perceived problems in using ICT tools to deliver courses

The students were asked to rate along a five-point 7-item Likert scale (where "1"= strongly Agree and "5" = strongly Disagree) the problems or perceived problems of e-learning. The 8-item scale was divided into 4 factors. They are given below:

COMMUNICATION

1. I like to clarify problems face to face rather than through e-mails or discussion forums.
2. In online medium one loses the impact of body language and facial expressions which normally aid communication.
3. Lack of instant/timely feedback in online learning environments.

TIME

1. Written communication is time consuming.
2. Online/e-learning is more time intensive than traditional classroom based learning.

TECHNICAL PROBLEMS

1. Lack of technical support from the institutions.

2. Technical problems associated with computer and online learning environments.

Cronbach's coefficient alpha was used to assess scale internal reliability for the Likert scale used to collect data on the variable of interest (problems perceived). The Cronbach's Alpha Value for the Likert scale came out to be 0.716. The high alpha reliability gives a support for questionnaire content reliability.

Table 13 - Learners' Perspective - Perceived Problems

Problems or perceived problems associated with e-learning courses (using ICT tools)	Label	Mode	Median	Mean	Std. Dev	Agreement (%)
I like to clarify problems face to face rather than through e-mails or discussion forums.	COMM	2	2	2.05	.749	87.5 (7.5N, 5 D)
Technical problems associated with computer and online Learning environments (WebCT for this particular course).	TECH	2	2	2.18	.636	70 (30 N)
Lack of instant/timely feedback.	COMM	2	2	2.28	.987	65 (20 N, 15 D)
Written communication is time consuming.	TIME	2	2	2.35	.770	72.5 (15 N, 12.5 D)
In online medium one loses the impact of body language and facial expressions which normally aid communication.	COMM	3	3	2.70	.791	42.5 (45 N, 12.5 D)
Online/e-learning is more time intensive than traditional classroom based learning.	TIME	3	3	3.38	1.055	17.5 (32.5 N, 50 D)
Lack of technical support from the institutions.	TECH	4	4	3.32	1.163	22.5 (25 N, 52.5D)

Responses with 'mode = 2' (Agree) – The statements with which most of the respondents agreed are given below

- I like to clarify problems face to face rather than through e-mails or discussion forums.

- Technical problems associated with computer and online Learning environments (WebCT for this particular course).
- Lack of instant/timely feedback.
- Written communication is time consuming.

Responses with 'mode = 3' (Neutral) – The statements with maximum percentages of neutral responses were:

- In online medium one loses the impact of body language and facial expressions which normally aid communication.
- Online/e-learning is more time intensive than traditional classroom based learning.

Responses with 'mode = 4' (Disagree) – The statements with which most of the respondents disagreed are given below.

- Lack of technical support from the institutions.

Results from Likert Scale: Out of the three factors (in the Likert Scale), there was one factor (Communication) with which maximum percentage of respondents agreed. The following table shows agreement, disagreement or neutral response towards the 7-item scale (based on the three factors).

Table 14 - Learners' Perspective - Perceived Problems (Factors)

COMMUNICATION	
1. I like to clarify problems face to face rather than through e-mails or discussion forums.	*A*
2. In online medium one loses the impact of body language and facial expressions, which normally aid communication.	*N*
3. Lack of instant/timely feedback in online learning environments.	*A*
TIME	
1. Written communication is time consuming.	*A*
2. Online/e-learning is more time intensive than traditional classroom based learning.	*N*
TECHNICAL BARRIER	
1. Lack of technical support from the institutions.	*D*
2. Technical problems associated with computer and online learning environments.	*A*

Kruskal-Wallis Test: Problems Perceived vs. Teaching Mode Preferences

Summing the scores across the 8 items created a scale of 'total perceived problems'. The scale had a potential range of 8 to 40. The actual scale range varied from 13 to 29. Kruskal-Wallis Test was conducted to compare the summated scores on 'total perceived problems' for the different 'teaching mode preference' groups. The results indicate that there were no significant differences (p=0.089) in 'total perceived problems' between the three groups.

Mann Whitney Test: Problems Perceived vs. Online Course Delivery

A Mann- Whitney U Test was conducted to determine the differences in the responses towards perceived problems ($p < 0.05$) between those who had used ICT tools (e-learning) prior to this course and those who were new to this online environment. The results indicate that there were no significant differences (p=0.680) in 'total perceived problems' between the two groups.

2. Advantages or perceived advantages of using ICT tools to deliver your courses

The students were asked to rate along a five-point 12-item Likert scale (where "1"= strongly Agree and "5" = strongly Disagree) the advantages or perceived advantages in using ICT tools to deliver courses. The 12-item scale was divided into 5 factors. They are given below:

CONSTRUCTIVISM

1. I like the fact that e-learning gives me more control and flexibility over my learning with minimal lecturer input.
2. Asynchronous environment allows me to write carefully about ideas (encouraging critical reflection).

COLLABORATION, DISCUSSION AND COMMUNICATION

1. Group discussions through discussion forums are convenient and helpful.
2. Group work can be easily managed and organised using online collaborative tools.
3. Online medium can offer the potential for greater equality and participation from shy and passive learners (who are not that active in face-to-face discussion).
4. Communication between staff and students is better through emails and discussion

forums.

ACCESSIBILTY AND AVAIBALITY

1. Convenient and course documents, lectures, and other information can be made available to us all the time.
2. Teachers are more available to the students, even outside of regular face-to-face class meetings.
3. Self-paced (Allows me to do my work when I want).
4. E- learning enables communication and collaboration between learners without the barriers of time and place.

ASSESSMENT

1. Online formative assessment (for practice) are very convenient.

INTERACTIVITY

1. Multimedia instructions (videos, audios, simulations, animations etc) are interactive and easier to follow.

Cronbach's coefficient alpha was used to assess scale internal reliability for the Likert scale used to collect data on the variable of interest (advantages perceived). The Cronbach's Alpha Value for the Likert scale came out to be 0.714. The high alpha reliability gives a support for questionnaire content reliability.

A detailed breakdown (with mean, mode, median and percentages) of the learners' attitudes towards e learning is shown in **Table 15.**

Table 15 - Learners' Perspective - Advantages of e-learning courses

Advantages of e-learning courses (using ICT tools)	Label	Mode	Median	Mean	Agreement (%)
Convenient and course documents, lectures, and other information can be made available to us all the time.	ACC	2	2	2.15	75 (22.5 N, 2.5 D)
E- learning enables communication and collaboration between learners without the barriers of time and place.	ACC	2	2	2.30	62.5 (37.5 N)
Self-paced (Allows me to do my work when I want).	ACC	2	2	2.45	57.5 (40 N, 2.5 D)
Online medium can offer the potential for greater equality and participation from shy and passive learners (who are not that active in face-to-face discussion).	COLL	2	3	2.78	47.5 (27.5 N, 25 D)
Asynchronous environment allows me to write carefully about ideas (encouraging critical reflection).	CONS	3	3	2.6	45 (45 N, 10 D)
Online formative assessment (for practice) are very convenient.	ASST	3	3	2.65	42.5 (37.5 N, 20 D)
I like the fact that e-learning gives me more control and flexibility over my learning with minimal lecturer input.	CONS	3	3	2.68	42.5 (45 N, 12.5 D)
Group work can be easily managed and organised using online collaborative tools.	COLL	3	3	2.7	40 (50 N, 10 D)
Multimedia instructions (videos, audios, simulations, animations etc) are interactive and easier to follow.	INT	3	3	2.78	32.5 (60 N, 7.5)
Teachers are more available to the students, even outside of regular face-to-face class meetings.	ACC	3	3	2.78	35 (52.5 N, 12.5 D)
Group discussions through discussion forums are convenient and helpful.	COLL	3	3	3.02	32.5 (67.5 N, 32.5 D)
Communication between staff and students is better through emails and discussion forums.	COLL	4	3	3.18	25 (32.5 N, 42.5 D)

Responses with 'mode = 2' (Agree) – The statements with which most of the respondents agreed are given below -

- Convenient and course documents, lectures, and other information can be made available to us all the time.
- E- learning enables communication and collaboration between learners without the barriers of time and place.
- Self-paced (Allows me to do my work when I want).
- Online medium can offer the potential for greater equality and participation from shy and passive learners (who are not that active in face-to-face discussion).

Responses with 'mode = 3' (Neutral) – The statements with maximum percentages of neutral responses were -

- Asynchronous environment allows me to write carefully about ideas (encouraging critical reflection).
- Online formative assessment (for practice) are very convenient.
- I like the fact that e-learning gives me more control and flexibility over my learning with minimal lecturer input.
- Group work can be easily managed and organised using online collaborative tools.
- Multimedia instructions (videos, audios, simulations, animations etc) are interactive and easier to follow.
- Teachers are more available to the students, even outside of regular face-to-face class meetings.
- Group discussions through discussion forums are convenient and helpful.

Responses with 'mode = 4' (Disagree) – The statements with which most of the respondents disagreed are given below -

- Communication between staff and students is better through emails and discussion forums.

Results from Likert Scale: The following table shows agreement, disagreement or neutral response towards the 12-item scale (based on the five factors).

Table 16 - Learners' Perspective - Advantages of e-learning courses (Factors)

ACCESSIBILITY	
1. Convenient and course documents, lectures, and other information can be made available to us all the time.	*A*
2. Teachers are more available to the students, even outside of regular face-to-face class meetings.	*N*
3. Self-paced (Allows me to do my work when I want).	*A*
4. E- learning enables communication and collaboration between learners without the barriers of time and place.	*A*
COLLABORATION, DISCUSSION AND COMMUNICATION	
1. Group discussions through discussion forums are convenient and helpful.	*N*
2. Group work can be easily managed and organised using online collaborative tools.	*N*
3. Online medium can offer the potential for greater equality and participation from shy and passive learners (who are not that active in face-to-face discussion).	*A*
4. Communication between staff and students is better through emails and discussion forums.	*D*
ASSESSMENT	
1. Online formative assessments (for practice) are very convenient.	*N*
CONSTRUCTIVIM	
1. I like the fact that e-learning gives me more control and flexibility over my learning with minimal lecturer input.	*N*
2. The Asynchronous environment allows me to write carefully about ideas (encouraging critical reflection).	*N*
INTERACTIVITY	
1. Multimedia instructions (videos, audios, simulations, animations etc) are interactive and easier to follow.	*N*

Kruskal-Wallis Test: Advantages Perceived vs. Teaching Mode Preferences

Summing the scores across the twelve items created a scale of 'total perceived advantages'. The scale had a potential range of 12 to 60. The actual scale range was from 24 to 46. Kruskal-Wallis Test was conducted to compare the summated scores on 'total perceived advantages' for the different 'teaching mode preference' groups. The results indicate that there were no significant differences (p=0.167) in 'total perceived advantages' between the three groups.

Mann Whitney Test: Problems Perceived vs. Online Course Delivery

A Mann- Whitney U Test was conducted to determine the differences in the responses towards perceived advantages ($p < 0.05$) between those who had a previous experience

with online learning and those who didn't. The results indicate that there were no significant differences (p=0.680) between the two groups.

PART B: RESPONSES FROM NOMINAL GROUPS (CYCLE 2)

Nominal Group Technique was used to gather ideas, solutions, and recommendations from students as a part of course evaluation. One Nominal Group session was organised for each course for this action research cycle within two weeks of the completion of the course. The Lecturer introduced the Nominal Group technique to the students and clarified any queries. The same instructions sheets were given to all student groups and the venue for all sessions was the same. Only the students were present during the nominal group sessions and the group participants were self-selective. The following figure shows some images of the evaluation sheets returned by the students.

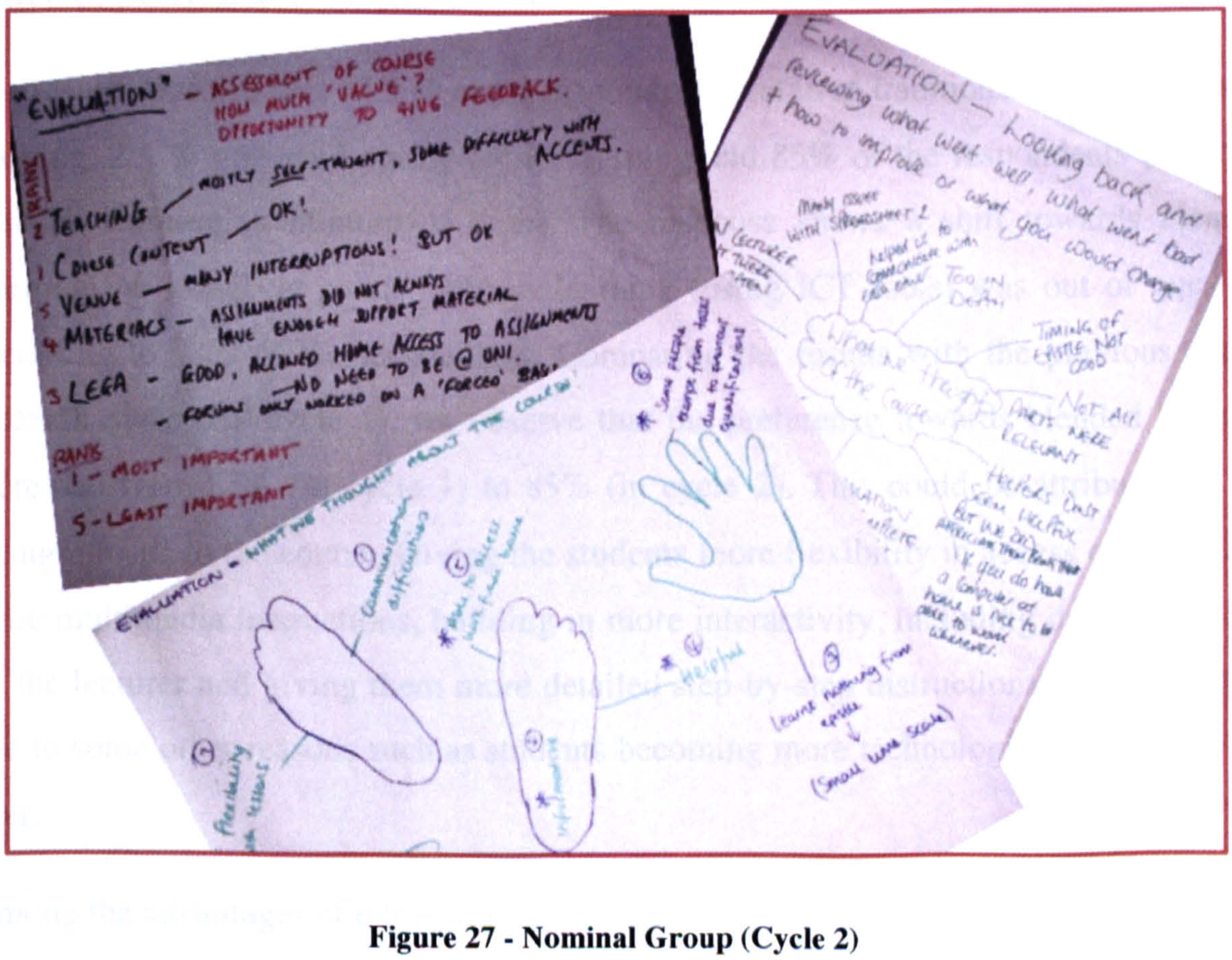

Figure 27 - Nominal Group (Cycle 2)

The following table shows the key responses noted from the Nominal Group analysis pertaining to the online aspect of the course. It shows the negatives and positives of the course/e-learning (in general) as identified by the students. The number against every response (in square brackets) is the number given by students to that particular statement (out of 10) – 1 being most important to them.

Negatives	Positives
1. Forums only worked on 'forced basis' not spontaneously. [3]	1. Home access to assignments – No need to be at University. [3]
2. Short time limit to do some tasks. [2]	2. Flexibility with lessons. [7]
3. Communication difficulties. [1]	3. Able to access work from home. [5]
4. Information on how to complete tasks was not good enough. [N]	4. Don't have to go to all classes. [N]
5. Assignments did not always have enough support material. [4]	5. If you do have a computer at home – it's nice to be able to work whenever. [N]
6. Many students don't have access to computers outside of University. [N]	6. Good to be able to do things in your own time. [5]
	7. Some people exempted from tasks due to previous qualifications. [6]

* N –Not numbered

PART C: SUMMARY OF RESULTS (CYCLE 2)

The results revealed that 12.5 % of the respondents preferred traditional classroom based learning, 2.5 % preferred purely online learning and 85% of the respondents preferred blended learning (a mixture of both). The response shows a shift towards blended learning but to accept purely online/e-learning (using ICT tools) was out of question according to 98% of the respondents. Comparing the results with the previous action research cycle (LP cycle 1), we observe that the preference towards blended learning increased from 55% (in cycle 1) to 85% (in cycle 2). This could be attributed to the changes made to the course (Giving the students more flexibility in access of materials, more multimedia instructions, building in more interactivity, including demonstrations by the lecturer and giving them more detailed step-by-step instructions). This could be due to some other reasons such as students becoming more technologically aware every year.

Among the advantages of e-learning, the statements with which most of the respondents agreed were:

- Convenient and course documents, lectures, and other information can be made available to us all the time.
- E- learning enables communication and collaboration between learners without the barriers of time and place.
- Self-paced (Allows me to do my work when I want).

- Online medium can offer the potential for greater equality and participation from shy and passive learners (who are not that active in face-to-face discussion).

Apart from the above advantages, a few more advantages of e-learning (pertaining to the online aspect of the course) were identified through the Nominal Group analysis. The students liked the fact that they could access the assignments sitting at home; they also liked the flexibility they had with lessons (lessons being available to them all the time).

Among the problems of e-learning, the statements with which most of the respondents agreed or strongly agreed were:

- I like to clarify problems face to face rather than through e-mails or discussion forums.
- Technical problems associated with computer and online Learning environments (WebCT for this particular course).
- Lack of instant/timely feedback.
- Written communication is time consuming.

These responses were quite similar to the responses gathered in cycle 1 except for the statement 'Technical problems associated with computer and online Learning environment (WebCT for this particular course)', which was not noted as one of the major barriers to e-learning in cycle 1. In cycle 1, the online learning environment was based on Moodle (called LEGA) and in this cycle WebCT (MOLE) was used to deliver the course online. This change in the system could be attributed to the new added barrier to e-learning in cycle 2 (with respect to this course). A few problems of e-learning (pertaining to the online aspect of the course) were also identified through the Nominal Group analysis. Students mentioned that the 'discussion forums' worked only on forced basis and even after providing a lot more step-by-step instructions (after cycle 1) they still requested for more information and support material to complete the assignments. The students complained about the short time limit to do some tasks and also mentioned that many students don't have access to computers outside of University, which could lead to accessibility problems.

The following table looks at the recommendation made in cycle 1 (implemented for cycle 2) and the responses collected/observed in cycle 2 (based on those recommendations).

Table 17 - Recommendations from Cycle 1

Impact of culture	The demographic data of the respondents were as follows: 95% of the respondents were home students and the rest 5% were overseas students. Therefore, this data was not used in the analysis for finding statistical difference between home students and overseas students (as the numbers were not the same or almost the same) as it may lead to inappropriate results/inferences.
Demonstration by the Lecturer	This was very much liked and appreciated by the students and will be continued in cycle 3.
More online instructions/detailed step-by-step information	Even after providing a lot more step-by-step instructions (after cycle 1) they still requested for more information and support material to complete the assignments (which would be further provided to them in cycle 3).
More multimedia instructions	This was very much liked and appreciated by the students and will be continued in cycle 3.
Flexibility in access of materials	The students liked the fact that they could access the assignments sitting at home; they also liked the flexibility they had with lessons (lessons being available to them all the time).
Attendance not compulsory	Students liked the fact that they could complete their exercises on their own (purely online learning) and submit their assignments online and if they need any help and support they may come to the sessions (blended learning).
Animated Demonstration on the Computer	Animated demonstrations were provided to the students, which they very much liked. The questionnaire contained an additional question to see if the students prefer online animation to face-to-face demonstration or online text based information. The highest (top 3 preferences) percentages of responses were: 52.5% of the students stated that they would prefer an animated online demonstration and a face-to-face demonstration, 17.5% stated an online text based information and a face-to-face demonstration, 15% stated C only face-to-face demonstration. This shows that irrespective of the provision of animated demonstrations, the students still preferred demonstrations by the lecturer to animated ones. Though, animated demonstrations were preferred over text based online instructions or information. Therefore, cycle 3 would continue to have animated as well as live demonstrations by the lecturer.

The following table looks at the recommendation made in cycle 1 (implemented for cycle 2) and the responses collected/observed in cycle 2 (based on those recommendations).

Table 17 - Recommendations from Cycle 1

Impact of culture	The demographic data of the respondents were as follows: 95% of the respondents were home students and the rest 5% were overseas students. Therefore, this data was not used in the analysis for finding statistical difference between home students and overseas students (as the numbers were not the same or almost the same) as it may lead to inappropriate results/inferences.
Demonstration by the Lecturer	This was very much liked and appreciated by the students and will be continued in cycle 3.
More online instructions/detailed step-by-step information	Even after providing a lot more step-by-step instructions (after cycle 1) they still requested for more information and support material to complete the assignments (which would be further provided to them in cycle 3).
More multimedia instructions	This was very much liked and appreciated by the students and will be continued in cycle 3.
Flexibility in access of materials	The students liked the fact that they could access the assignments sitting at home; they also liked the flexibility they had with lessons (lessons being available to them all the time).
Attendance not compulsory	Students liked the fact that they could complete their exercises on their own (purely online learning) and submit their assignments online and if they need any help and support they may come to the sessions (blended learning).
Animated Demonstration on the Computer	Animated demonstrations were provided to the students, which they very much liked. The questionnaire contained an additional question to see if the students prefer online animation to face-to-face demonstration or online text based information. The highest (top 3 preferences) percentages of responses were: 52.5% of the students stated that they would prefer an animated online demonstration and a face-to-face demonstration, 17.5% stated an online text based information and a face-to-face demonstration, 15% stated C only face-to-face demonstration. This shows that irrespective of the provision of animated demonstrations, the students still preferred demonstrations by the lecturer to animated ones. Though, animated demonstrations were preferred over text based online instructions or information. Therefore, cycle 3 would continue to have animated as well as live demonstrations by the lecturer.

PART D: RECOMMENDATIONS/SUGGESTIONS AFTER CYCLE 2

1. Culture (national cultural differences) - Because not many students in this course were international students so it is tough to compare the attitude differences between home and overages students. A survey, which looks into these differences, will be carried out separately (See Chapter 6) after the third cycle.
2. Flexibility - The students liked the fact that they could access the assignments sitting at home; they also liked the flexibility they had with lessons (lessons being available to them all the time) but at the same time complained about the short time limit to do some tasks. Therefore, it was suggested to incorporate more flexibility in submission of assignments in cycle 3. The course was such that the assignments need not to be followed in an order and therefore the students (in cycle 3) would be given the option of submitting the assignments in whatever order they want to. [It is important to note here that this kind of flexibility may not be possible in other courses where it is important to follow a particular flow in the submission of assignments is important]
3. Computer Proficiency – The students mentioned in the Nominal Group that many students don't have access to computers outside of University, which could lead to accessibility problems. Therefore, a further analysis would be done in Cycle 3 to see the effect of computer accessibility and computer proficiency on the attitude of students towards e-learning.

5.4.3 Action Research Cycle 3 (N=37)

PART A: RESULTS FROM QUESTIONNAIRE SURVEY (CYCLE 3)

The self-administered questionnaire given to the students at the end of the course had eleven questions. Three to collect demographic data (age, gender, cultural background); four to gather pre-existing learning preferences; two to collect data on computer efficiency; and the rest two to gather perceived problems and advantages in using ICT tools in learning. . The results indicated several trends in overall components perceived as useful to the learners when using ICT tools for their learning.

Demographic Data

In total, 37 students responded to the survey. The demographic data of the respondents were as follows: 91% of the respondents were home students and the rest 8% were

overseas students; 49.5 % of the respondents were of the age group of '26-30' years of age, 10.5 % were of the age group '21-25', 24.3 % of them were above 30 and the rest 16.2% were under 20 years of age. 91.9 % of the respondents were Female and the rest 8.1% were male. This was mainly because the students doing the 'Diploma in Hygiene and Therapy' course were mainly females. *Therefore, this data has not been used in the analysis for finding statistical difference between males and females (as the numbers were not the same or almost the same) as it may lead to inappropriate results (inferences).*

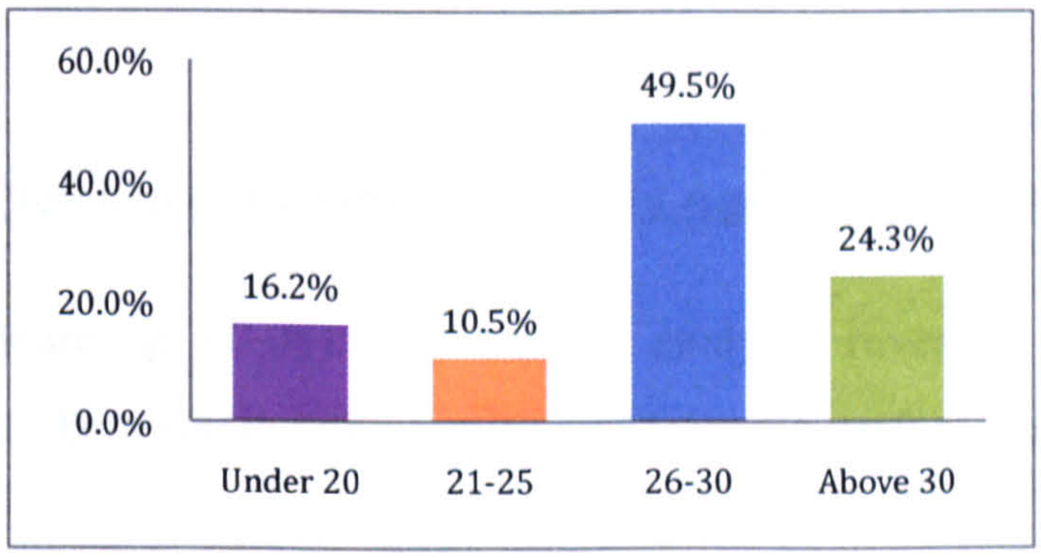

Figure 28 - Learners' Perspective (Demographic Data Age)

Learning Preferences and Computer Proficiency

This section covered questions on previous experiences of e-learning (if any) and pre-existing learning preferences. The data collected will look into the factors that may predict learners' preferences and perceptions towards e-learning.

1. In general, what kinds of teaching/delivery mode do you like/prefer?

The results revealed (See **Figure 29**) that 18.9 % respondents preferred traditional classroom based learning and 81.1% of the respondents preferred blended learning (a mixture of both) and no one preferred purely online learning.

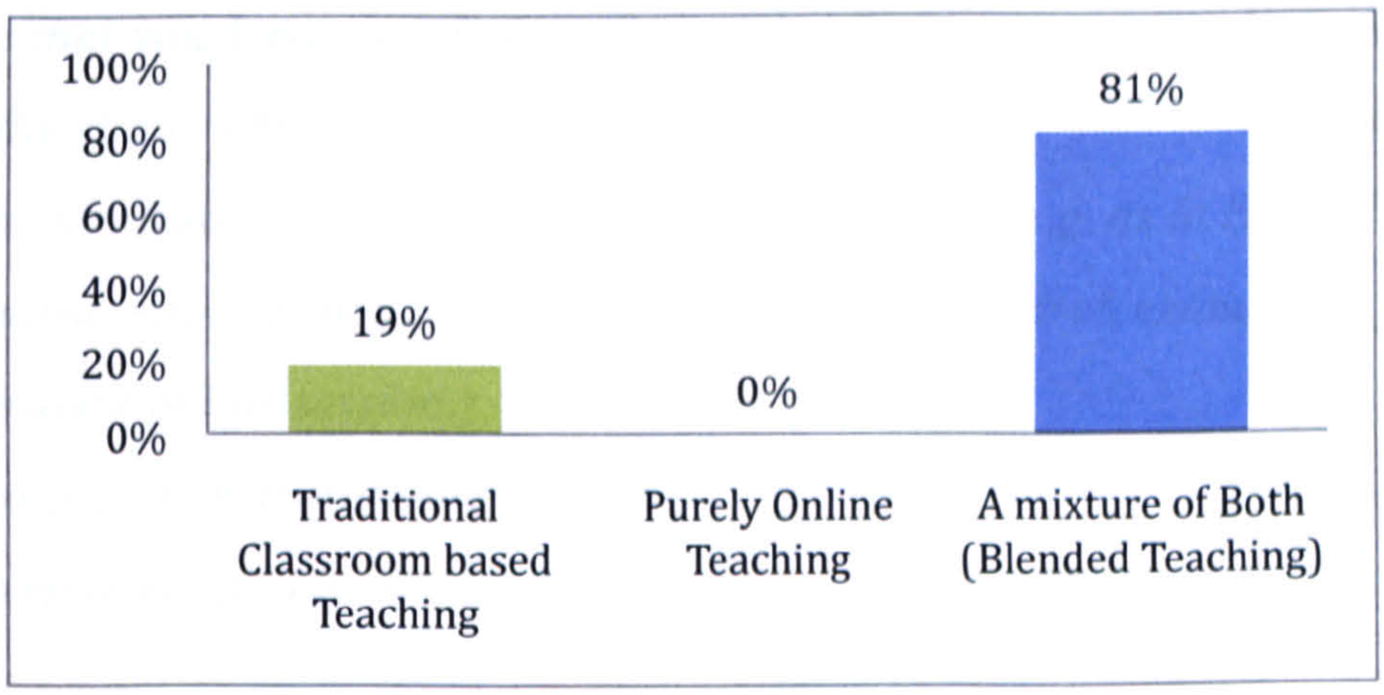

Figure 29 - Learners' Perspective - Learning Mode Preference (Cycle 3)

Cross Tabulation: Preference of Learning Mode Vs Age and Computer Proficiency

Pearson Chi – Square ($p < 0.05$): Chi Square analysis revealed that there was no significant difference between the age groups and learning preferences, ($p = 0.247$).

Pearson Chi – Square ($p < 0.05$): Chi Square analysis revealed that there was no significant difference between 'computer proficiency' and learning preferences, ($p = 0.314$).

2. Do you have any previous experience (prior to your current course in LEGA) in online/e-learning (using ICT tools)?

40.54 % of the students had a previous experience in online/e-learning. The rest 59.46 % were new to this online/blended environment.

Cross Tabulation: Previous experience in online/e-learning vs. Teaching Mode Preference and Age

Pearson Chi – Square ($p < 0.05$): Chi Square analysis revealed that there was no statistically significant relationship between 'Previous experience in online/e-learning' and 'teaching mode preferences', ($p = 0.116$).

Pearson Chi – Square ($p < 0.05$): Chi Square analysis revealed that there was no statistically significant relationship between 'Previous experience in online/e-learning' and 'age', ($p = 0.175$).

3. Imagine that you have the choice of choosing how you are taught in lessons. You have the choice of:

A. An online text based information about the session (For e.g. as in Excel Part 1)

B. An animated online demonstration (For e.g. animated search example in your finding literature online session.)

C. A face-to-face demonstration/lecture from the lecturer

Options given were: A only, B only, C only, A and B, A and C, B and C, A B and C

This question was asked to see if the students prefer online animation or face-to-face demonstration as both the approaches were used during the course. 32.4 % stated A, B and C (An online text based information, An animated online demonstration and a face-to-face demonstration), 24.3 % of the students stated that they would prefer B and C only (An animated online demonstration and a face-to-face demonstration), 21.6 % stated A and C only (An online text based information and a face-to-face demonstration), 2.7% stated A and B (An online text based information and An animated online demonstration) only and 18.9 % stated C only (a face-to-face demonstration).

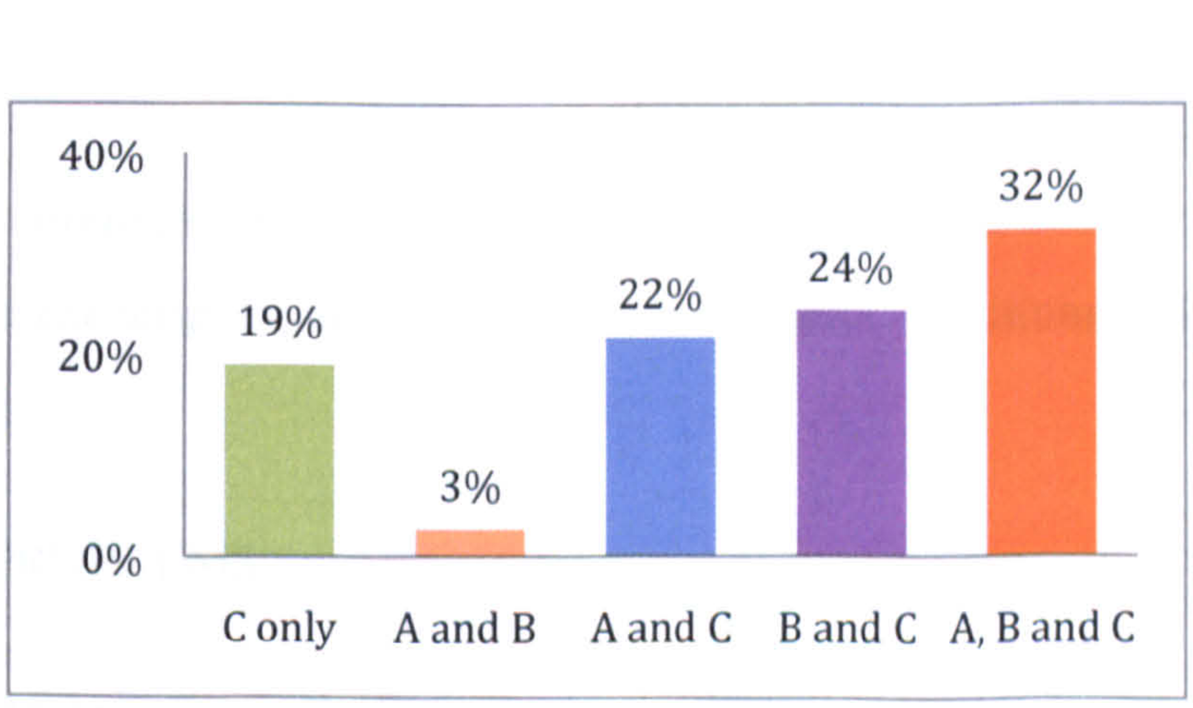

Figure 30 - Learners' Perspective - Animation Vs. Demonstration by a Lecturer

4. Do you have access to a computer at home?

100% of the respondents replied 'yes' to this question.

5. How do you rate your computer skills?

24.3% stated that they were 'good' at using computers, 70.3% were average and the rest 5.4 % knew very little about computers.

Problems or perceived problems in using ICT tools

This section of the questionnaire was designed to gather perceptions on perceived problems and advantages in using ICT tools in learning.

1. Problems or perceived problems in using ICT tools to deliver courses

The students were asked to rate along a five-point 7-item Likert scale (where "1"= strongly Agree and "5" = strongly Disagree) the problems or perceived problems of e-learning. The 7-item scale was divided into 3 factors. They are given below:

COMMUNICATION

1. I like to clarify problems face to face rather than through e-mails or discussion forums.
2. In online medium one looses the impact of body language and facial expressions, which normally aid communication.
3. Lack of instant/timely feedback in online learning environments.

TIME

1. Written communication is time consuming.
2. Online/e-learning is more time intensive than traditional classroom based learning.

TECHNICAL PROBLEMS

1. Lack of technical support from the institutions.
2. Technical problems associated with computer and online learning environments.

Cronbach's coefficient alpha was used to assess scale internal reliability for the Likert scale used to collect data on the variable of interest (problems perceived). The Cronbach's Alpha Value for the Likert scale came out to be 0.709. The high alpha reliability gives a support for questionnaire content reliability.

Table 18 - Learners' Perspective - Perceived Problems

Problems or perceived problems associated with e-learning courses (using ICT tools)	Label	Mode	Median	Mean	Agreement (%)
I like to clarify problems face to face rather than through e-mails or discussion forums.	COMM	2	2	2.30	73 (18.9 N, 8.1 D)
Lack of instant/timely feedback.	COMM	2	2	2.46	56.8 (27 N, 16.2 D)
Written communication is time consuming.	TIME	2	2	2.46	64.9 (21.6 N, 13.5 D)
Technical problems associated with computer and online Learning environments (WebCT for this particular course).	TECH	3	3	2.7	35.1 (59.5 N, 5.4 D)
In online medium one looses the impact of body language and facial expressions which normally aid communication.	COMM	3	3	2.76	37.8 (51.4 N, 10.8 D)
Online/e-learning is more time intensive than traditional classroom based learning.	TIME	3	3	3.41	18.9 (37.8 N, 43.2 D)
Lack of technical support from the institutions.	TECH	4	3	3.22	29.7 (24.3 N, 45.9 D)

Responses with 'mode = 2' (Agree) – The statements with which most of the respondents agreed are given below

- I like to clarify problems face to face rather than through e-mails or discussion forums.
- Lack of instant/timely feedback.
- Written communication is time consuming.

Responses with 'mode = 3' (Neutral) – The statements with maximum percentages of neutral responses were:

- In online medium one looses the impact of body language and facial expressions which normally aid communication.
- Online/e-learning is more time intensive than traditional classroom based learning.
- Technical problems associated with computer and online Learning environments (WebCT for this particular course).

Responses with 'mode = 4' (Disagree) – The statements with which most of the respondents disagreed are given below.

- Lack of technical support from the institutions.

Results from Likert Scale: Out of the three factors (in the Likert Scale), there was one factor (Communication) with which maximum percentage of respondents agreed. The following table shows agreement, disagreement or neutral response towards the 7-item scale (based on the three factors).

Table 19 - Learners' Perspective - Perceived Problems (Factors)

COMMUNICATION	
1. I like to clarify problems face to face rather than through e-mails or discussion forums.	*A*
2. In online medium one loses the impact of body language and facial expressions, which normally aid communication.	*N*
3. Lack of instant/timely feedback in online learning environments.	*A*
TIME	
1. Written communication is time consuming.	*A*
2. Online/e-learning is more time intensive than traditional classroom based learning.	*N*
TECHNICAL BARRIER	
1. Lack of technical support from the institutions.	*D*
2. Technical problems associated with computer and online learning environments.	*N*

Kruskal-Wallis Test: Problems Perceived vs. Teaching Mode Preferences

Summing the scores across the 8 items created a scale of 'total perceived problems'. The scale had a potential range of 7 to 35. The actual scale range varied from 13 to 26. Kruskal-Wallis Test was conducted to compare the summated scores on 'total perceived problems' for the different 'teaching mode preference' groups. The results indicate that there were no significant differences (p=0.367) in 'total perceived problems' between the three groups.

Kruskal-Wallis Test: Problems Perceived vs. 'Computer Proficiency/Literacy'

The results indicate that there was a significant difference (p=0.022) in 'total perceived problems' between the four groups (Excellent computer literacy, good, average and very little). Further comparisons (after inspecting the mean ranks for the four groups)

revealed that the highest score was for the group that had considered themselves as good in computer skills (25.22) indicating more % of disagreement to the perceived problems (1=Strongly Agree, 2= Agree, 3= Neutral, 4 = Disagree, 5 = Strongly Disagree). See **Figure 31** for mean ranks of other groups.

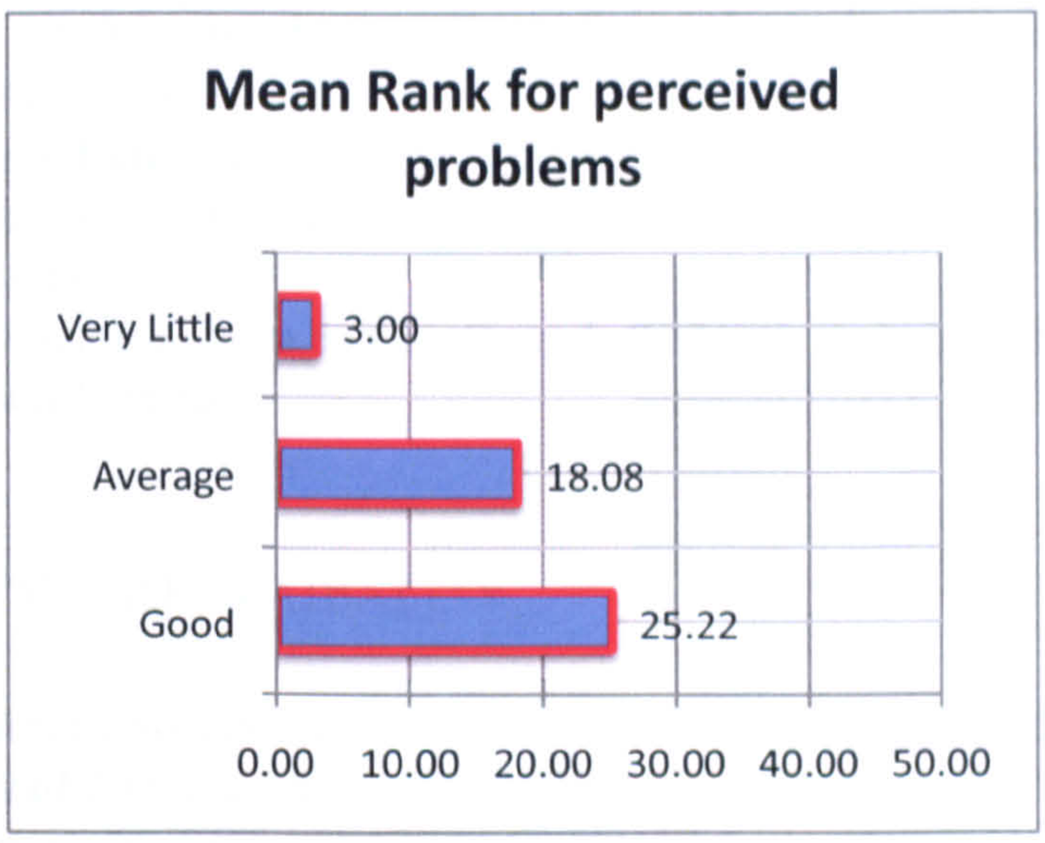

Figure 31 - Learners' Perspective - Kruskal Wallis (Perceived Problems vs. Computer literacy)

Mann Whitney Test: Problems Perceived vs. Online Course Delivery

A Mann- Whitney U Test was conducted to determine the differences in the responses towards perceived problems ($p < 0.05$) between those who had used ICT tools (e-learning) prior to this course and those who were new to this online environment. The results indicate that there were no significant differences (p=0.313) in 'total perceived problems' between the two groups.

2. Advantages or perceived advantages of using ICT tools to deliver your courses

The students were asked to rate along a five-point 12-item Likert scale (where "1"= strongly Agree and "5" = strongly Disagree) the advantages or perceived advantages in using ICT tools to deliver courses. The 12-item scale was divided into 5 factors. They are given below:

CONSTRUCTIVISM

1. I like the fact that e-learning gives me more control and flexibility over my learning with minimal lecturer input.

2. Asynchronous environment allows me to write carefully about ideas (encouraging critical reflection).

COLLABORATION, DISCUSSION AND COMMUNICATION

1. Group discussions through discussion forums are convenient and helpful.
2. Group work can be easily managed and organised using online collaborative tools.
3. Online medium can offer the potential for greater equality and participation from shy and passive learners (who are not that active in face-to-face discussion).
4. Communication between staff and students is better through emails and discussion forums.

ACCESSIBILTY AND AVAIBALITY

1. Convenient and course documents, lectures, and other information can be made available to us all the time.
2. Teachers are more available to the students, even outside of regular face-to-face class meetings.
3. Self-paced (Allows me to do my work when I want).
4. E- learning enables communication and collaboration between learners without the barriers of time and place.

ASSESSMENT

1. Online formative assessment (for practice) are very convenient.

INTERACTIVITY

1. Multimedia instructions (videos, audios, simulations, animations etc) are interactive and easier to follow.

Cronbach's coefficient alpha was used to assess scale internal reliability for the Likert scale used to collect data on the variable of interest (advantages perceived). The Cronbach's Alpha Value for the Likert scale came out to be 0.711. The high alpha reliability gives a support for questionnaire content reliability.

A detailed breakdown (with mean, mode, median and percentages) of the learners' attitudes towards e learning is shown in **Table 20.**

Table 20 - Learners' Perspective - Advantages of e-learning courses

Advantages of e-learning courses (using ICT tools)	Label	Mode	Median	Mean	Agreement (%)
Convenient and course documents, lectures, and other information can be made available to us all the time.	ACC	2	2	2.16	73 (24.3 N, 2.7 D)
E- learning enables communication and collaboration between learners without the barriers of time and place.	ACC	2	2	2.30	62.2 (37.8 N)
Self-paced (Allows me to do my work when I want).	ACC	2	2	2.22	67.6 (32.4 N)
Asynchronous environment allows me to write carefully about ideas (encouraging critical reflection).	CONS	2	2	2.41	59.5 (35.1 N, 5.4 D)
Online medium can offer the potential for greater equality and participation from shy and passive learners (who are not that active in face-to-face discussion).	COLL	2	3	2.76	48.6 (27 N, 24.3 D)
Multimedia instructions (videos, audios, simulations, animations etc) are interactive and easier to follow.	INT	2	3	2.57	48.6 (45.9 N, 5.4)
Group work can be easily managed and organised using online collaborative tools.	COLL	3	3	2.65	43.2 (48.6 N, 8.1 D)
I like the fact that e learning gives me more control and flexibility over my learning with minimal lecturer input.	CONS	3	3	2.70	40.5 (45.9 N, 13.5 D)
Online formative assessment (for practice) are very convenient.	ASST	3	3	2.73	37.8 (40.5 N, 21.6 D)
Teachers are more available to the students, even outside of regular face-to-face class meetings.	ACC	3	3	2.70	40.5 (48.6 N, 10.8 D)
Group discussions through discussion forums are convenient and helpful.	COLL	3	3	3.03	24.3 (51.4 N, 24.3 D)
Communication between staff and students is better through emails and discussion forums.	COLL	4	3	3.04	32.4 (32.4 N, 35.1 D)

Responses with 'mode = 2' (Agree) – The statements with which most of the respondents agreed are given below.

- Convenient and course documents, lectures, and other information can be made available to us all the time.
- Asynchronous environment allows me to write carefully about ideas (encouraging critical reflection).
- E- learning enables communication and collaboration between learners without the barriers of time and place.
- Self-paced (Allows me to do my work when I want).
- Online medium can offer the potential for greater equality and participation from shy and passive learners (who are not that active in face-to-face discussion).

Responses with 'mode = 3' (Neutral) – The statements with maximum percentages of neutral responses were:

- Online formative assessment (for practice) are very convenient.
- I like the fact that e-learning gives me more control and flexibility over my learning with minimal lecturer input.
- Group work can be easily managed and organised using online collaborative tools.
- Multimedia instructions (videos, audios, simulations, animations etc) are interactive and easier to follow.
- Teachers are more available to the students, even outside of regular face-to-face class meetings.
- Group discussions through discussion forums are convenient and helpful.

Responses with 'mode = 4' (Disagree) – The statements with which most of the respondents disagreed are given below -

- Communication between staff and students is better through emails and discussion forums.

Results from Likert Scale: The following table shows agreement, disagreement or neutral response towards the 12-item scale (based on the five factors).

Table 21 -Learners' Perspective - Advantages of e-learning courses (Factors)

ACCESSIBILITY	
1. Convenient and course documents, lectures, and other information can be made available to us all the time.	*A*
2. Teachers are more available to the students, even outside of regular face-to-face class meetings.	*N*
3. Self-paced (Allows me to do my work when I want).	*A*
4. E- learning enables communication and collaboration between learners without the barriers of time and place.	*A*
COLLABORATION, DISCUSSION AND COMMUNICATION	
1. Group discussions through discussion forums are convenient and helpful.	*N*
2. Group work can be easily managed and organised using online collaborative tools.	*N*
3. Online medium can offer the potential for greater equality and participation from shy and passive learners (who are not that active in face-to-face discussion).	*A*
4. Communication between staff and students is better through emails and discussion forums.	*D*
ASSESSMENT	
1. Online formative assessments (for practice) are very convenient.	*N*
CONSTRUCTIVIM	
1. I like the fact that e-learning gives me more control and flexibility over my learning with minimal lecturer input.	*N*
2. The Asynchronous environment allows me to write carefully about ideas (encouraging critical reflection).	*A*
INTERACTIVITY	
1. Multimedia instructions (videos, audios, simulations, animations etc) are interactive and easier to follow.	*N*

Kruskal-Wallis Test: Advantages Perceived vs. Teaching Mode Preferences

Summing the scores across the twelve items created a scale of 'total perceived advantages'. The scale had a potential range of 12 to 60. The actual scale range was from 24 to 46. Kruskal-Wallis Test was conducted to compare the summated scores on 'total perceived advantages' for the different 'teaching mode preference' groups. The results indicate that there were no significant differences (p=0.243) in 'total perceived advantages' between the three groups.

Kruskal-Wallis Test: Problems Perceived vs. 'Computer Proficiency/Literacy'

The results indicate that there was no significant difference (p=0.389) in 'total perceived advantages' between the four groups (Excellent computer literacy, good, average and very little).

Mann Whitney Test: Problems Perceived vs. Online Course Delivery

A Mann- Whitney U Test was conducted to determine the differences in the responses towards perceived advantages ($p < 0.05$) between those who had a previous experience with online learning and those who didn't. The results indicate that there were no significant differences (p=0.313) between the two groups.

PART B: RESPONSES FROM NOMINAL GROUPS (CYCLE 3)

Nominal Group Technique was used to gather ideas, solutions, and recommendations from students as a part of course evaluation. One Nominal Group session was organised for each course for this action research cycle within two weeks of the completion of the course. The Lecturer introduced the Nominal Group technique to the students and clarified any queries. The same instructions sheets were given to all student groups and the venue for all sessions was the same. Only the students were present during the nominal group sessions and the group participants were self-selective. The following figure shows some images of the evaluation sheets returned by the students.

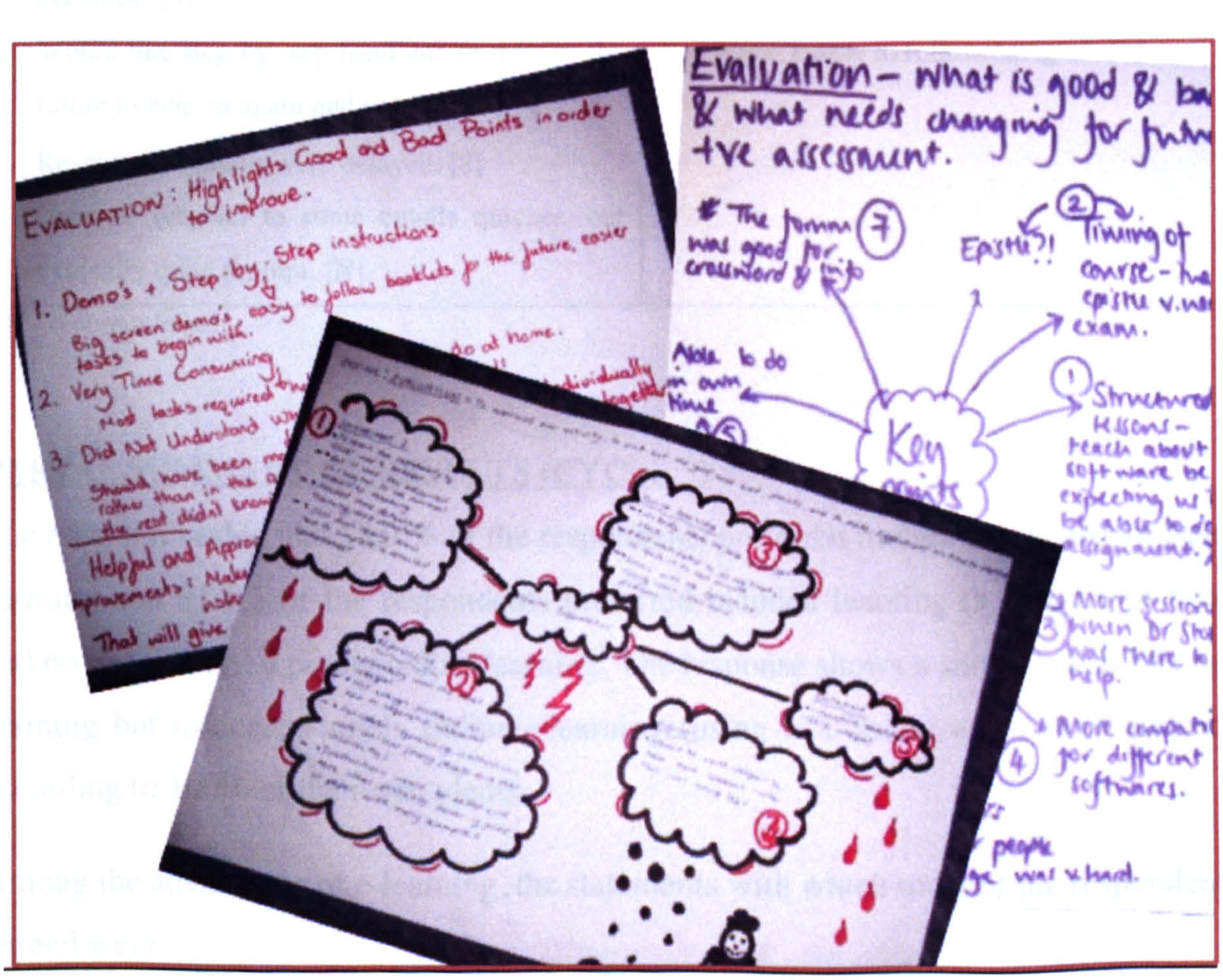

Figure 32 - Nominal Group (Cycle 3)

The following table shows the key responses noted from the Nominal Group analysis pertaining to the online aspect of the course. It shows the negatives and positives of the course/e-learning (in general) as identified by the students. The number against every response (in square brackets) is the number given by students to that particular statement (out of 10) – 1 being most important to them.

Negatives	Positives
1. Make Tuesdays compulsory for 1 hr in which instruction and demo's are given (That will give no excuse for incomplete work and less panicking). [N]	1. Demo's and Step-by-Step instructions – Big screen demos and (easy to follow booklets for the future –suggestion). [N]
2. Instructions would be better and clearer, probably if given on paper with many examples. [2]	2. Able to do in own time - accessible form home. [5]
3. In online learning – Not motivated to do the tasks so leave it to last minute. [3]	3. Forums – Helpful to get advice for similar problems. [9]
4. In online learning – Errors with the system-losing work, password problems. [3]	4. Online submission of assignments useful. [4]
5. In online learning – Nobody there to help if you get stuck. [3]	5. WebCT/MOLE is good once been shown how to use it. [N]
6. Would like step-by-step handouts to refer in the future to help us again and not forget. [N]	6. Forum was good for crossword and info. [7]
7. Response to emails were delayed. [8]	7. WebCT easy to follow/navigate. [5]
8. Need to respond to some emails quicker, but generally quite prompt. [N]	

* N –Not numbered

PART C: SUMMARY OF RESULTS (CYCLE 3)

The results revealed that 18.9 % of the respondents preferred traditional classroom based learning and 81.1% of the respondents preferred blended learning (a mixture of both) and no one preferred purely online learning. The response shows a shift towards blended learning but to accept purely online/e-learning (using ICT tools) was out of question according to 100% of the respondents.

Among the advantages of e-learning, the statements with which most of the respondents agreed were:

- Convenient and course documents, lectures, and other information can be made available to us all the time.

- Asynchronous environment allows me to write carefully about ideas (encouraging critical reflection).
- E- learning enables communication and collaboration between learners without the barriers of time and place.
- Self-paced (Allows me to do my work when I want).
- Online medium can offer the potential for greater equality and participation from shy and passive learners (who are not that active in face-to-face discussion).

Apart from the above advantages, a few more advantages of e-learning (pertaining to the online aspect of the course) were identified through the Nominal Group analysis. The students liked the face-to-face demonstrations and step-by-step instructions and also suggested to provide an easy to follow booklet for the future. They liked to use forums to get advice on some issues/problems. They found online submission of assignments to be quite useful. Also, WebCT (online learning environment) was liked by the students: they stated that WebCT is easy to follow/navigate and that it is good once been shown how to use it.

Among the problems of e-learning, the statements with which most of the respondents agreed or strongly agreed were:

- I like to clarify problems face to face rather than through e-mails or discussion forums.
- Lack of instant/timely feedback.
- Written communication is time consuming.

These responses were quite similar to the responses gathered in cycle 1 and cycle 2. A few problems of e-learning (pertaining to the online aspect of the course) were also identified through the Nominal Group analysis. Students mentioned that in online learning one is not motivated to do the tasks so leave it to last minute, there is problem of losing work etc due to system errors, and nobody is there to help if you get stuck. Also lack of immediate/timely response was seen as a barrier to e-learning. More instructions/handouts, which they could refer to in future, were requested.

The students also suggested making attendance compulsory for 1 hr in which instruction and demos could be given (That will give no excuse for incomplete work

and less panicking). In cycle 1, attendance was compulsory and it was noted (particularly in Nominal Group Analysis) that the students complained of the classes being too crowded; therefore, it was suggested that they could complete their exercises on their own (purely online learning) and submit their assignments online and if they need any help and support they may come to the sessions (blended learning). This was implemented in Cycle 2 and the student liked the flexibility given to them with regards to coming to lectures. This was, therefore, continued for cycle 3 as well. Though, in cycle 3, one group in the Nominal Groups suggested that making attendance compulsory would be useful to create more structure and discipline to the course. This shows that the learning preferences of students vary from person to person. Some students like flexibility while some prefer structure. There is a dilemma; a dilemma to choose between student autonomy and student dependence; a dilemma to choose between teachers' authority and teachers' discretion and a dilemma to choose between structure and freedom (of the learning environment).

The students also mentioned in the Nominal Group that they would like a step-by-step handout to refer in the future to help them again and not forget. This was an important point to note, as the access to these courses is limited to their enrolment time in the University. Once they graduate, they do not have access to WebCT courses anymore. In such a case, to promote life-long learning, it is important that they have something to take away with them (as they clearly noted in the Nominal Group). One suggestion could be the use of electronic portable portfolios (which the students can take with them when they leave). "*An e-portfolio is a web-published collection of documents, information, link resources, audio and video clips that showcases the demonstrated abilities, know-how and skills of a specific person to her own selected stakeholders*" (Good, 2006). The students can make their portfolios (including PowerPoint presentations, Coursework – assignment, projects, Personal commentary and reflections, Research information - such as documentation and references supporting specific research, Books lists, Video clips, audio recordings etc) and could take it away with them. This is reflected in what Emma (2006) says while discussing the benefits of using an e-portfolio to record progress on a Post-Compulsory PGCE course rightly says "*VLEs are owned by the institution, and the e-portfolio is owned by me. It's sort-of a life-long learning for me. With a VLE it's not something that belongs to you, or that you can take with you after you've finished with it.*"

The following table looks at the recommendation made in cycle 2 and the responses collected/observed in cycle 3 (based on those recommendations).

Table 22 - Recommendations from Cycle 2

Impact of culture	The demographic data of the respondents were as follows: 92% of the respondents were home students and the rest 8% were overseas students. Because not many students in this course were international students so it is tough to compare the attitude differences between home and overages students. A survey, which looks into these differences, will be carried out separately (See Chapter 6) after the third cycle.
Computer Literacy	The results indicate that there was a significant difference (p=0.022) in 'total perceived problems' between the four groups (Excellent computer literacy, good, average and very little). Further comparisons (after inspecting the mean ranks for the four groups) revealed that the highest score was for the group that had considered themselves as good in computer skills (25.22) indicating more % of disagreement to the perceived problems. The results show that computer literacy (good skills in computer) contributes towards the perception of less problems associated with e-learning.
Flexibility in submission of assignments	The students liked the fact that they could access the assignments sitting at home; they also liked the flexibility they had with lessons and they also had the choice of finishing the assignment in whatever order they wish to.

5.5 Reflection and Discussion

The focus of the study was to investigate the learners' perspective of e-learning. The research identifies some of the problems and advantages of an e-learning environment as perceived by the learners that may predict the use e-learning.

Comparing the three cycles, we observe that the preference towards blended learning increased from 55% (in cycle 1) to 85% (in cycle 2) and 81% (in cycle 3) as shown in **Figure 33.**

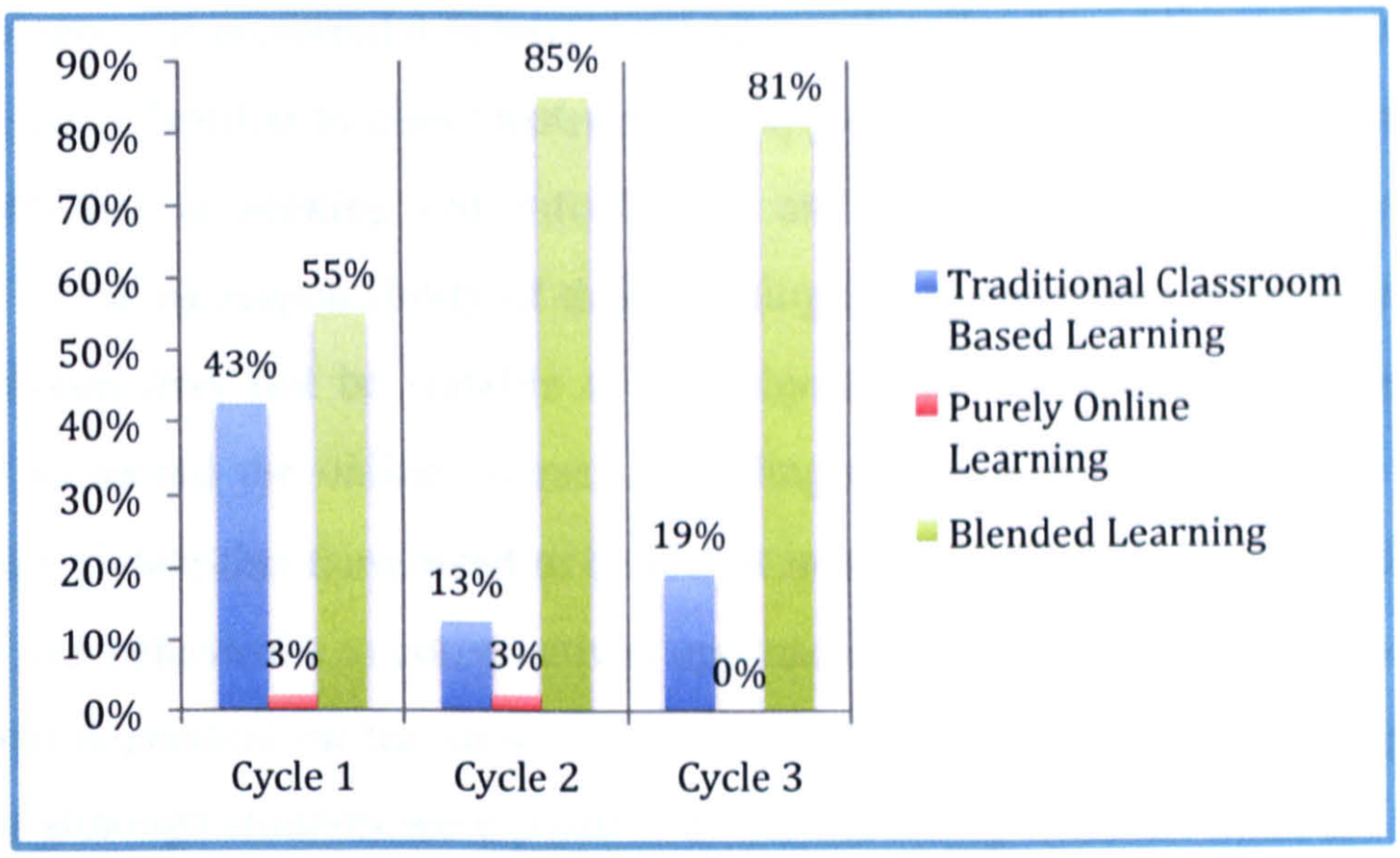

Figure 33 - Comparing the three Learners' Perspective cycles

This shows that the changes we made to the course (as suggested by students in the nominal groups and from the analysis of the questionnaire) after cycle 1 made the students like the blended mode of learning much more than the traditional mode of learning. Giving the students more flexibility in access of materials, more multimedia instructions (audio, video, animations), more structured environment (in terms of predictability i.e. ability to see the whole course layout/lecture notes etc), building in more interactivity, including demonstrations by the lecturer (along with online instructions – i.e. making it more blended) and giving them more detailed step-by-step instructions (which can help them in completing the assignments even when the lecturer is not around – a behaviourist approach to learning) made the course medium more likeable to the students. There was a drastic difference towards the preference of blended learning mode between cycle 1 (55%) and cycle 2 (85%). Along with other factors, one of the reasons for this increase was the increase in the multimedia instructions (animations and videos), therefore, it can be suggested that the multimedia components in the online courseware should be improved. Staff would need to include more audio, video, animation and multimedia features in their courseware to enhance the attractiveness of the online courseware and to motivate students. [*It is important to note here that the increase in the preference towards bended mode of learning (in cycle 2 and cycle 3) could also be due to other factors such as students getting more and more technologically aware.]*

Some students still preferred a behaviourist approach to learning (direct instructions) as they were more familiar to direct instructional approach. These students need new skills to be confident in seeking out information and finding answers/solutions to their problems by taking responsibility of their learning and by reflecting upon their learning. Constructivism may not be suitable to all subjects and all students and therefore its important to mould the online courses according to the subject matter. The nature of some topics dictate that these need to be taught in an instructional manner and therefore the shift from behaviorist to constructivist approach of teaching and learning needs to be gradual and dependent on the subject. Lee (2001) in a survey on Engineering students found that although students were positive about e-learning and welcomed the variety of learning methods afforded them, as many as 36% either disagreed or strongly disagreed that they were able to learn independently on the Internet. Students indicated a strong preference for teacher guidance – a strong notion to support behaviorism.

The qualitative and quantitative feedback collected articulated the positive impact of e-learning.

1. **Course documents, lectures and other information can be made available to them all the time.** Students can actively access teaching materials locally in campus as well as global web resources.

2. **Online medium enables communication and collaboration between learners without the barriers of time and place** and it allows the learners to do their work when they want and how they want.

3. **The online medium can offer the potential for greater equality and participation from shy and passive learners,** who are not that active in face-to-face discussion. In comparison to more traditional group discussions in a classroom setting, electronic bulletin boards separate the content of the communication from the personal characteristics of the student (e.g., appearance, accent, age) (Weisskirch and Milburn, 2003). It is suggested that this medium then reduces gender and racial biases in student communications (Weisskirch and Milburn, 2003) and encourages greater participation by shy students. This may not always be the case as in most online discussions the anonymity of the

learners is not maintained but the online medium definitely gives them more time to think, reflect and then put their ideas on board.

4. **Asynchronous environment allows them to write carefully about ideas, encouraging critical reflection.** Garrison, Anderson, and Archer (2000) assert that text-based, computer-mediated communication allows students to be more reflective in the content of their message pertaining to the task.Under certain circumstances, writing can be a highly effective form of communication that encourages reflection and precision of expression. When thoughtfully integrated with the rich dynamic of fast-paced, spontaneous verbal communication in a face-to-face learning environment, the educational possibilities are multiplied. Asynchronous Internet communication tools provide a platform where participants can confront questionable ideas and faulty thinking in more objective and reflective ways than might be possible in a face-to-face context (Garrison and Kanuka, 2004). The online discussions focus on collaborative yet individually timed contributions that evidence students taking "*time to be reflective and provide well-thought-out answers*" (Bender, 2003). The rationale supporting this view is that there is a greater focus on the substantive issues and less distraction or noise in an asynchronous text-based Internet environment.

Along with the above advantages, some issues/problems related to an e-learning environment also came out. They are mentioned below:

1. **Discussions forums were found to be useful to get information but not very useful to promote discussions.** Most of the students either disagreed (cycle 1) or were neutral (cycle 2 and 3) to the statements: Group work can be easily managed and organised using online collaborative tools; Group discussions through discussion forums are convenient and helpful. Also the level of participation in discussion boards was found to be minimal. Also students noted in the Nominal Groups that Forums worked on forced basis. This study did not show any evidence that students necessarily feel that they benefit from computer-based discussions. Provision of discussion boards does not mean that the students will use it or like it. They may seem to be interested in other aspects of online learning (printing off lecture notes, submission of online

assignments, multimedia components of lectures etc) but they are quite reluctant to engage in online discussions. It is important to note here that the usage of discussion boards in purely online courses or distance-learning courses could be much more than blended courses, as in such courses, there is no other option other than the online modes (like discussion boards, emails etc) to communicate and collaborate. In blended courses they get a chance to communicate face to face with other students as well as teachers. Therefore the need to communicate, discuss, critically reflect or collaborate through the online medium decreases.

The literature suggests that students will not collaborate unless collaboration is structured into the course. Some collaborative learning activities (which are well-suited for online environments), suggested by Hiltz and Turoff (2002) include debates, group projects, case study discussions, simulations, role-playing exercises, the sharing of solutions for homework problems, and the collaborative composition of essays, stories, and research plans. However, in reality, most online collaborative work is usually related to discussion board conversations, in which students merely generate a dialogue with their peers. Collaborative activities should, therefore, be well thought out and planned prior to incorporating them into the course.

Wilson and Whitlock (1998) noted in their research study that the majority of students did not collaborate online with other students or become involved in extra work that was available to them because they said it was too time consuming. Kewell and Beeby (2003) confirmed the same. In their study, 94% of the students happily retrieved missed lecture notes, and only 13.5% were willing to take part in any discussion forums. Urdan and Weggen (2000) say in their report that e-learning requires more dedicated and disciplined learners as well as those who have the motivation and confidence to succeed. Putting a discussion board on a course website does not mean learning would take place through discussion and collaboration. It is dependent on students' motivation and structure of the course. Slack, Beer, Armitt and Green (2003) have found that online discussion can facilitate deep learning but only in circumstances of effective instructor facilitation and support. There would always be a few

active/motivated learners who would participate in discussions and post their thoughts/reflection online irrespective of the rewards (carrot) or forced intervention of the teacher (stick) and there would always be many 'lurkers' (A lurker is a person who reads discussions on a message board, newsgroup, chat rooms or other interactive system, but rarely participates). The question that arises here is that **what do we do to motivate the 'lurkers' to participate in such discussions.** Do we integrate some kind of informal reward within these forums (Showing them a bit of a carrot)? Or do we make the participation compulsory and formally assessed (showing them the 'stick')? Making participation compulsory deviates from the very basic principle of constructivism – 'Learner's control'. It discourages learner's control over their learning and freedom to choose learning resources. Williams (2002) in his paper, states that in most online courses, despite a compulsory requirement to contribute, many learners do not post messages as required but complete the course successfully. Same would be the case if we incorporate assessment or some kind of reward for participation as that would be a kind of enforced participation and may not result in constructive learning. Oliver and Shaw (2003) studied the impact of enforced participation in online discussions in Podiatry Medicine Degree in California (USA). They found that most of the contributions were 'assignment focused' and did not lead to constructive knowledge sharing events. They also stated that participants were simply "playing the game" of assessment. The question that arises here is - **Is it really necessary for the learners to participate in online discussions in order to feel a sense of community and encourage deeper learning by discussion and reflection?** There are a very few studies (Nonnecke and Preece, 2000; Gulati, 2004) who believe that lurking is a choice and a form of participation which is beneficial to the online groups. Nonnecke and Preece (2000) believe that silent learning may be deeper and more engaging than formal online discussions. Fritsch (1997) argues that learning, even in this more passive and less visible mode, is still occurring. The goal of the collaborative learning is not merely "knowledge acquisition" and "participation," (Sfard, 1998), but "knowledge building" focusing on knowledge creation (Paavola, Lipponen, & Hakkarainen, 2004) which can occur through 'lurking' as well.

Beaudoin (2002) studied the primary factors influencing "non-participation" in online discussions. He found that 23 out of the 55 online learners, offered by University of Maryland University College and Oldenberg University, did not actively participated in discussions. In the survey (sent out to these 23 learners), he found that they simply preferred to read what others wrote, or that they had thoughts but others made similar comments before they could post anything themselves. 40% indicated they had something in mind, but were not quite sure how to phrase it. 30% percent said they did not feel they understood the topic well enough to comment, while the same percentage said they were not sure what to contribute because the discussion seemed to drift away from the original topic. 25% percent acknowledged that they do not feel comfortable writing their ideas online. Only 4 students indicated that time constraints limited the amount of time they could spend writing comments.

Ability to monitor discussions, log books and other learner activities are used as a selling point for all virtual learning environments (Land and Bayne 2002), but this could be the very reason for learners to not to participate in discussions in online forums as the awareness of teacher's presence could make them conscious. The surveillance and disciplinary power of the teacher, who has normalised judgement for compulsory participation (Foucault 1977), may cause the silent learner to feel pressured and powerless to continue silent learning. There could be a certain level of discomfort with the electronic environment as well. Students want to "get it right" before they commit themselves to online dialogue because the written format seems so "public." It may be that online discourse feels more formal and premeditated, while classroom discussion lends itself to a more spontaneous, informal exchange that is not recorded and therefore is less likely to be retained (Beaudoin, 2002). On the other hand, it could be argued that active learners will always be active; be it a 'classroom face-to-face discussion' or an online discussion. It is the passive (shy, not so confident or not highly motivated) students who may become 'lurkers' in an online discussion forum. These passive learners may feel uncomfortable in putting their opinions out in the open or not confident to challenge others (in online as well as in face-to-face discussions). Such learners may have a greater possibility of critically reflecting or discussing or sharing

their ideas in an online environment than a classroom based environment. This could be because, students may find 'speaking up' on the online discussion forum less intimidating than face-to-face discussion (Tan, 2005; Tufel, 2007). This was also deducted from the survey in this research, as more than 60% of the students (in cycle 1 and cycle 3; 48% in cycle 2) agreed or strongly agreed that online medium can offer the potential for greater equality and participation from shy and passive learners, who are not that active in face-to-face discussion.

The above discussion has provided enormous reasons for non-participation in discussion forums. But there are two questions, which remain un-answered. **First,** what do we do to motivate the 'lurkers' to participate in such discussion forums and **second,** Is it really necessary for the learners to participate in online discussions in order to feel a sense of community and encourage deeper learning by discussion and reflection? Finding answer to these questions is out of the scope of this research but could be explored in future.

The online environment clearly has the capability to propagate the constructivist approach by encouraging learner controlled, critically reflected and deeper learning. This is only possible, if we make the environment more informal and give the students the choice to be anonymous (if they prefer it that way) and also by excluding the teachers from being active observers of the discussions. This would encourage participation from learners who may be silent just because of the awareness of the teacher's presence (such as in face to face discussions). Clearly there may be benefits in providing discussion forums on a course website to encourage critical reflection and discussion; but this medium should not be forced upon the students (either by carrot or stick). The participation or non-participation in these forums should not be the basis to conclude deeper learning for active participants while surface (information gathering) learning for passive participants. It is important to recognise that students' inclination to interact can depend on a variety of factors, including personality and learning styles. Lets end the discussion on discussion forums by a posing a question by Gulati (2004):

"By advocating use of online communication tools for learning community development as the key means to construct learning, are the online educators reproducing the distribution of power for some learners over others, which is a denial of constructivism?"

2. In all the three cycles, the statement (in advantages of e-learning) with which most of the students (40 -50%) disagreed was **that the communication between staff and students is better through emails and discussion forums.** Also a majority of students (60-70% in all the three cycles) found written communication (through forums and emails) to be time consuming. Improper or insufficient online communication between teaching staff and students creates isolation of online learners. Therefore, it is advisable for teachers to undergo training in facilitation and moderation skills to teach them how to give positive feedback and to play an active role in discussion to facilitate learning. Teaching staff must maintain a closer relationship in facilitating online discussion. Duggleby (2000) stresses that learners face a steep learning curve with online learning and as teachers; we must encourage positive and enthusiastic communication with our online learners and constantly monitor their progress. The use of e-learning tools/media as part of the blended learning strategy can also help in reducing the communication-barrier. The introduction of a face-to-face alternative (along with the online media - email, conferencing, discussion forums, chats etc) for carrying out discussions and other communication purposes in blended approach can be seen as a significant part of the blended strategy to minimise the 'communication barrier'.

3. **Lack of instant/timely feedback in e-learning was found to be a major barrier.** Some students may demand an instant feedback, which may not be possible with the asynchronous nature of online discussion. To reduce the problems in facilitating online discussion, teachers as facilitators must first seek to understand the need to prepare students adequately for this online learning style. Also, responding immediately and giving prompt feedback may result in reliance of students on teachers' responses rather than student inquired learning (constructivist approach). Therefore, teachers/course designers need to keep this in mind while structuring the course and designing a feedback

mechanism to encourage student inquiry and collaboration rather than quick and immediate answer to a question that can itself be a barrier for effective student learning.

4. Among the problems with e-learning, the statement with maximum percentage of agreement in all the three cycles was that they **like to clarify problems face to face rather than through e-mails or discussion forums.** Also losing the impact of body language and facial expressions in e-learning which normally aid communication was appoint of concern for most of the students. Nominal Group evaluation also suggests that the students preferred some kind of demonstration by the lecturer in the class apart from the lecture notes, animated demonstrations and online multimedia instructions on their online leaning management systems (Lega and WebCT). These findings indicate that students still prefer some form of face-to-face teaching environment. They are afraid that there is no human touch in e-learning and thus they may not be motivated in online learning. Therefore, a drastic shift from the traditional face-to-face learning to the other extreme of e-learning is not recommendable as the students are not yet ready for it. Each mode of learning has their own advantages and drawbacks and it is not surprising to say that Blended Learning, which incorporates the best of both the worlds, is the way forward. Blended Learning does not replace traditional classroom based learning rather it compliments and enhances face-to-face teaching as Jolliffe (2002) says, "*the use of e-learning is not to replace the face-to-face teaching, but to supplement it*". Within the limitations of the study, it can be rightly concluded that classroom based learning has given way to blended learning. E-learning and classroom based learning have blended together rather than one ruling out the other. There is still much debate about whether purely online learning will replace blended learning. Cross (2000) notes that 'the magic is in the mix' but blended learning still has some aspects of traditional learning which is often viewed as old fashioned, static and expensive to deliver. At the same time, the collegial atmosphere of classrooms with the real time give and take where the students can see their lectures face-to-face and clear their doubts is the most motivating reason for the students to like classroom environment. This research has examined a blended course over a period of three action research cycles and has found that blended course delivery is currently the most

preferred/liked (by students) approach. The results indicate that the use of technology along with classroom based lectures supports the emergence of blended learning, which contributes to the enhancement of learning process.

5.6 Conclusion

The qualitative and quantitative feedback collected clearly articulated the positive impact of e-learning. Some of the advantages of e-learning that were noted by learners were:

- *Accessibility and Availability* - Easy access and availability of course materials (course documents, lectures, and other information) to them all the time.
- *Better Collaboration in terms of time and place* - e-learning enables communication and collaboration between learners without the barriers of time and place.
- *Greater equality and participation from shy and passive learners* - Online medium can offer the potential for greater equality and participation from shy and passive learners (who are not that active in face-to-face discussion).
- *Encourage Critical Reflection* - Asynchronous environment allows them to write carefully about ideas.

Along with the above advantages, some of the disadvantages of e-learning/barriers to e-learning that were noted were:

- *Communication Problem* – Most of the students preferred to clarify problems face to face rather than through e-mails or discussion forums. Also lack of body language, facial expressions and physical cues in communication through emails and discussion forums was identified as one of the barriers to e learning. They also found written communication to be time consuming.

- *Lack of instant/timely feedback* – Lack of timely feedback from teachers was found to be a major barrier to e-learning.

Comparing the three Learners' Perspective's action research cycles, it was observed that the learner's preference towards blended learning increased from 55% (in cycle 1) to

85% (in cycle 2) and 81% (in cycle 3). This shows that the changes made to the course (as suggested by students in the nominal groups and from the analysis of the questionnaire survey) after cycle 1 made the students prefer/like the blended mode of learning much more than the traditional mode of learning. Giving the students more flexibility in access of materials, more multimedia instructions (audio, video, animations), more structured environment (in terms of predictability i.e. ability to see the whole course layout/lecture notes etc), building in more interactivity, including demonstrations by the lecturer (along with online instructions – i.e. making it more blended) and giving them more detailed step-by-step instructions (which can help them in completing the assignments even when the lecturer is not around – a behaviourist approach to learning) made the course more likeable to the students.

Chapter 6 – Cultural issues in e-learning

CHAPTER 6 – CULTURAL ISSUES IN E-LEARNING

6.1 Introduction

This part of the research came out of the action research cycle (Learner's cycle 1) in which it was observed (from the web log of the system usage pathways and frequency distribution), that overseas students spent more time online than home students. Also, overseas students preferred to discuss their problems with the tutor and fellow classmates through forums and other online media rather than face to face in the classroom. The literature also suggest that cultural differences can affect students' comfort level in working collaboratively versus individually, and they are reflected in the background knowledge students bring to a new learning situation (Moll *et al.*, 1993). Further examination of the 'cultural issue' in education revealed that that the number of overseas students in U.K is increasing; it is 1 in 7 now and in future it will increase even more (BBCa, 2007). The United Kingdom is second only to the USA (BBCb, 2004) in the international student market. The number of overseas students wanting to attend UK universities could triple to more than 870,000 by 2020 (BBCb, 2004). Universities around the world are opening their doors for international students due to economical and legislative (Bologna Declaration, 1999) considerations. The Bologna declaration (1999) represents a commitment by forty-five European countries to undertake a series of reforms in order to achieve greater consistency and portability across their higher education systems. This declaration is most likely to have a profound effect on the development of higher education globally. Since the future of the education itself is connected to the development of Information and Communication Technologies, there is a strong need to address the issue of e-learning in the Bologna Process (The European Students Forum, AEGEE). This process of Internationalisation and Globalisation is making Universities increasingly multicultural. As people from different cultural groups take on the exciting challenge of teaching and learning together, cultural values sometimes conflict. Consequently it becomes important (as providers) to be able to cater to both home student and overseas students and minimise the bias as much as possible. Border Pedagogy (as promoted by Bologna declaration) has to set up the conditions to create non-biased culturally sensitive environments for the target audiences.

In order to realise the aim of e-learning as an educational tool, it is essential to accommodate the learning needs of different cultures in order to promote equitable learning outcomes for targeted students (Henning, 2003; Selinger, 2004; Dede, 2000). Also, we need more cross-cultural research to understand and compare the effects of online learning across different cultures. Studies are needed to determine how the perceptions of online learning environment differ for international students located in the host country from the perceptions of students residing in their native country (Tu, 2001). "*Although few would disagree, that cultural factors are important in theory, there is surprisingly little research-based studies on cultural aspects of online leaning and teaching*" (Gunawardena, Wilson & Nolla, 2003).

This part of the research, therefore, will try to determine if the perceptions of e-learning differ for international students and home students and also investigate if e-learning can be used to overcome the cultural barriers in a multi-cultural educational setting. Also an 'E-Learning System for Water and Environmental Studies (eSWES)' project initiated by the RWTH University in Aachen, Germany for imparting an e-learning programme to Egypt (a country which is culturally, educationally and technologically very different form the providing country) will be studied to see if 'cultural differences' are considered when an e-learning course or environment is developed by one culture and used by another. This part of the study would help in understanding an educational system where different communities can better interact because cultural difference between two countries can also be seen within two universities of the same country or even within two groups of the same university. This case study will attempt to understand the important role of online learning in the process of building a unique cross-border educational environment between two countries.

6.2 Research Objectives

The objectives for this part of the research were as follows:

- To investigate if e-learning can help to reduce the cultural differences/barriers associated with learning in a multicultural classroom environment.
- To determine the importance of 'cultural differences' that needs to be considered while designing e-learning solutions for a country, which is culturally different from the provider country.

6.3 Learners' Perspective (Culture) Survey

6.3.1 Participants, Data collection and Analysis Procedure

For answering the research questions laid down above, secondary data and primary data were collected through literature review and a questionnaire survey.

Survey – A survey is a system for collecting information from or about people to describe, compare or explain their knowledge, attitude and behaviour (Fink, 2003). A web based self-administered questionnaire was used as the survey instrument to collect responses from individual respondents without the intervention of the researcher. The main purpose of the questionnaire was to gather information about the students' attitude and behaviour in a multicultural classroom to see if any differences exist between the overseas and the home students and also to investigate if e-learning or modern information and communication technologies can help reduce the differences and misunderstandings that occur in a classroom environment as the electronic medium offers the potential for different types of teaching - learning relationship and different patterns of interpersonal interaction.

Participants - The findings of this research are based on a survey designed to be completed by Masters students of two MSc courses: one in the School of Education and the other in the School of Clinical Dentistry at the University of Sheffield. These two courses were chosen because of a good mix of home and overseas students which was necessary to compare the two cohorts.

Data Collection and Analysis Procedures - An email was sent to the sample requesting them to participate in the survey. The e-mail included information about the study, the purpose of the survey and the URL to the survey site. Of the 25 students who received the email request, 19 completed the survey making the response rate to be 76%. The closed-ended questions were analysed using the statistical software program Advanced Statistical Package for the Social Sciences (SPSS). The data was analysed using non-parametric statistics. All of the statistical tests were set at the 0.05 level of significance. Analysis of the quantitative (Likert) data is discussed in the 'Findings' section and responses to the open questions are drawn into the final discussion section.

Instrument Reliability - Likert Scale reliability was assessed using Cronbach's alpha reliability coefficient (as explained in Chapter 3, pp 53).

6.3.2 Research Findings

Demographic Data

In total, **19 students** responded to the survey. The demographic data of the respondents were as follows: 53 % of the respondents were female and 47 % were male. 52 % of the respondents were of the age group 25 - 30. 32 % were in the age range of 20-25 and the rest 16 % were above 30 years of age (as shown below in **Figure 34**).

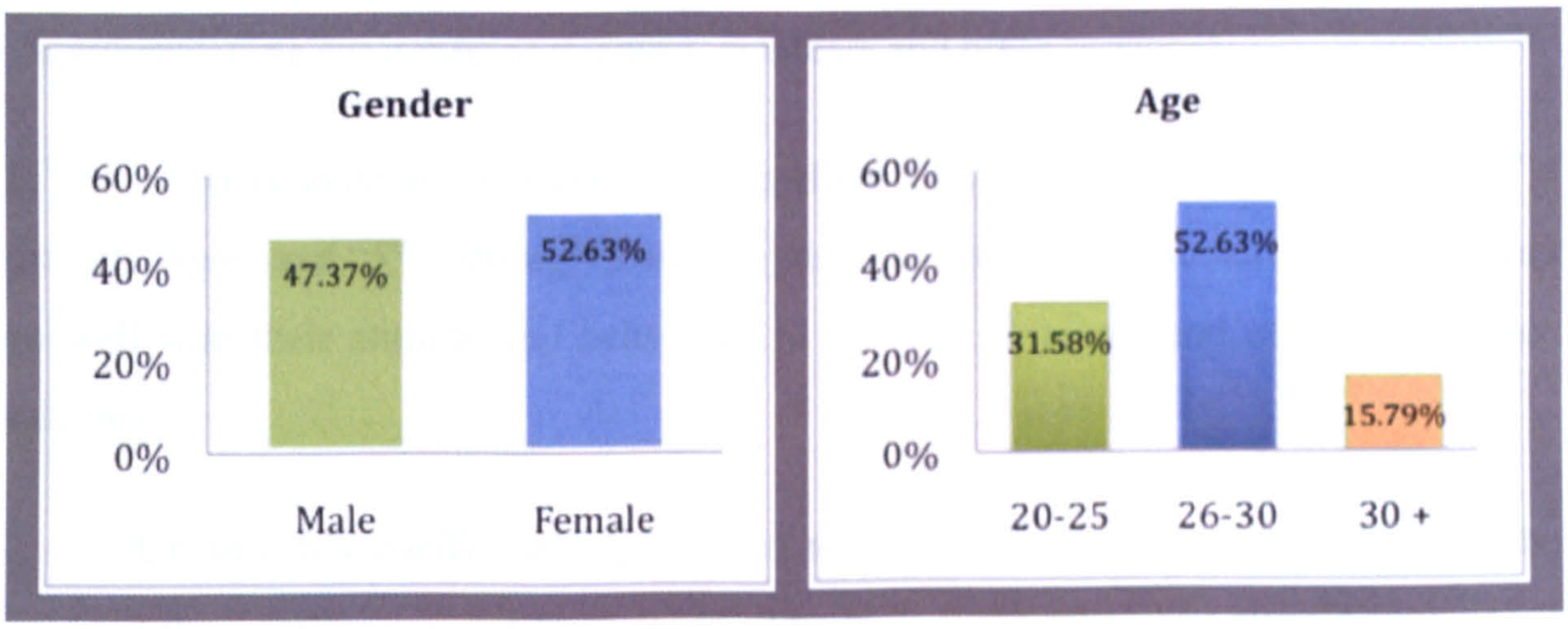

Figure 34 – Cultural Issues - Age and Gender (n=19)

68% of the respondents were overseas students and 32% were home students (as shown in **Figure 35**). A pie graph distribution of the respondents according to their first language is also shown in **Figure 35**).

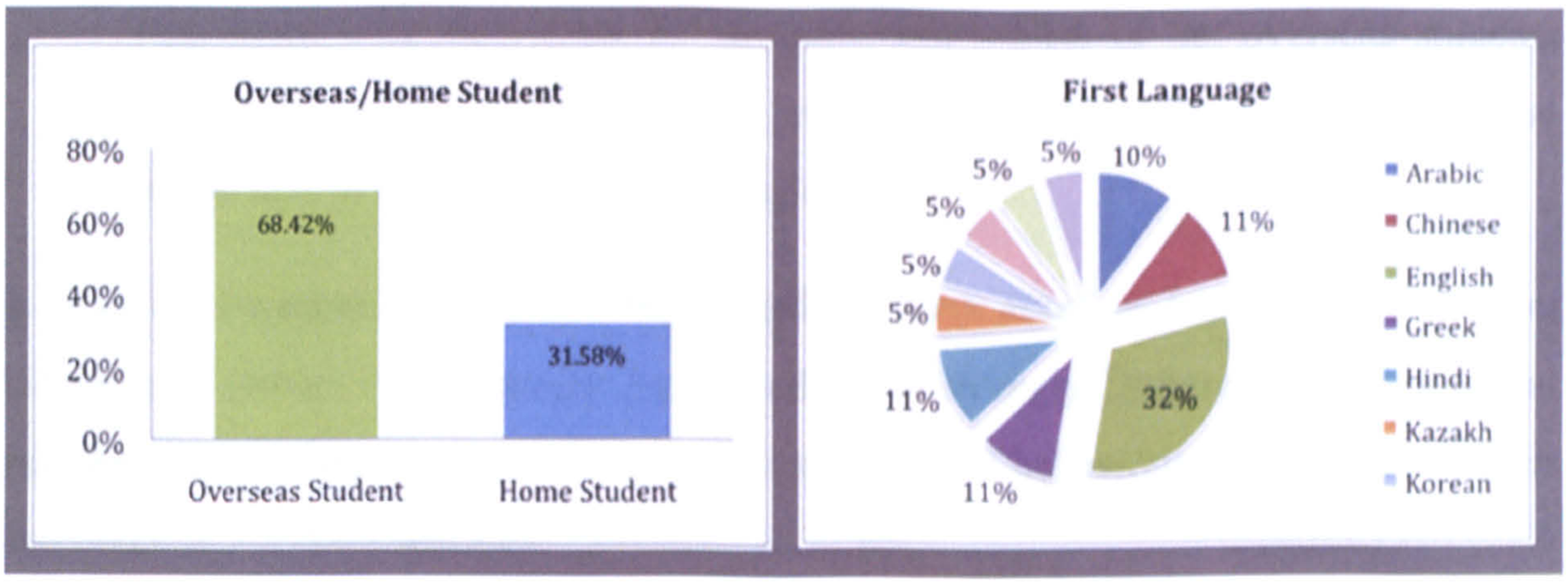

Figure 35 - Cultural Issues - Overseas vs. Home Students (n =19)

Attitude and Behaviour in a Multicultural classroom

This section covered questions on the students' preference of learning methods in a classroom-setting environment and their attitude and behaviour in a traditional classroom setting environment (lectures, seminars and other sessions).

1. The overseas students were asked to rate along a five-point Likert scale (where "1"= strongly Agree and "5" = strongly Disagree) the options, which suit their personality and go well with their attitude and behaviour in lectures, seminars and other face-to-face sessions.

> **Cronbach's coefficient alpha** used to assess scale internal reliability for the Likert scale came out to be 0.856. The high alpha reliability gives a support for questionnaire content reliability.

Table 23 shows the frequencies and descriptive statistics (table sorted in decreasing order of percentage of agreement).

Table 23 – Cultural Issues - Attitude and Behaviour (Overseas only)

Attitude and Behaviour	Mode	Median	Agreement (%)
I prefer to stay quiet in the class because I have a fear of speaking incorrect English.	2	2	53.8
I find seminars and discussions difficult to follow and understand.	4	4	38.5
I find lectures difficult to follow and understand	4	4	23.1

Responses with more than 50 % agreement - 54% of the overseas students agreed or strongly agreed that they prefer to stay quiet in the classroom because of the fear of speaking incorrect English.

2. Both the overseas students and home students were asked to rate along a five-point Likert scale (where "1"= strongly Agree and "5" = strongly Disagree) the options that suit their personality and go well with their attitude and behaviour in lectures, seminars and other face-to-face sessions.

Cronbach's coefficient alpha was used to assess scale internal reliability for the Likert scale. The Cronbach's Alpha Value for the Likert scale came out to be 0.848. The high alpha reliability gives a support for questionnaire content reliability.

Kolmogorov-Smirnov (K-S) normality test was done to assess the normality of the distribution of scores. A non-significant result (Sigma value of more than 0.05) indicates normality. In this case, the p value came out to be less than 0.05 for each item, suggesting violation of the assumption of normality. Therefore, non-parametric tests were used to analyse the Likert data (data distribution not being normal).

Table 24 shows the frequencies and descriptive statistics (table sorted in decreasing order of percentage of agreement).

Table 24 - Cultural Issues - Overseas and Home students (Classroom Behaviour)

Attitude and Behaviour	Mode	Median	Agreement (%)
I like to be actively involved in discussions with teachers to find out more about topics.	4	2	52.6
I prefer to stay quiet in the class because I like to listen and learn.	4	4	26.3
I like to be able to disagree with teachers and express my own point of view.	4	3	42.1

Mann-Whitney U test: Attitude and Behaviour in classroom vs. Student Status (Home or Overseas)

1. A Mann Whitney U-test for differences between medians reveals that there is a significant difference (P=0.007) between the 'home students' and the 'overseas students' when it comes to being actively involved in discussions with teachers to find out more about topics. That is the 'mean rank' of home students (5) was significantly different from that of overseas students (12.31). [See **Figure 36** for the statement: I like to be actively involved in discussions with teachers to find out more about topics].

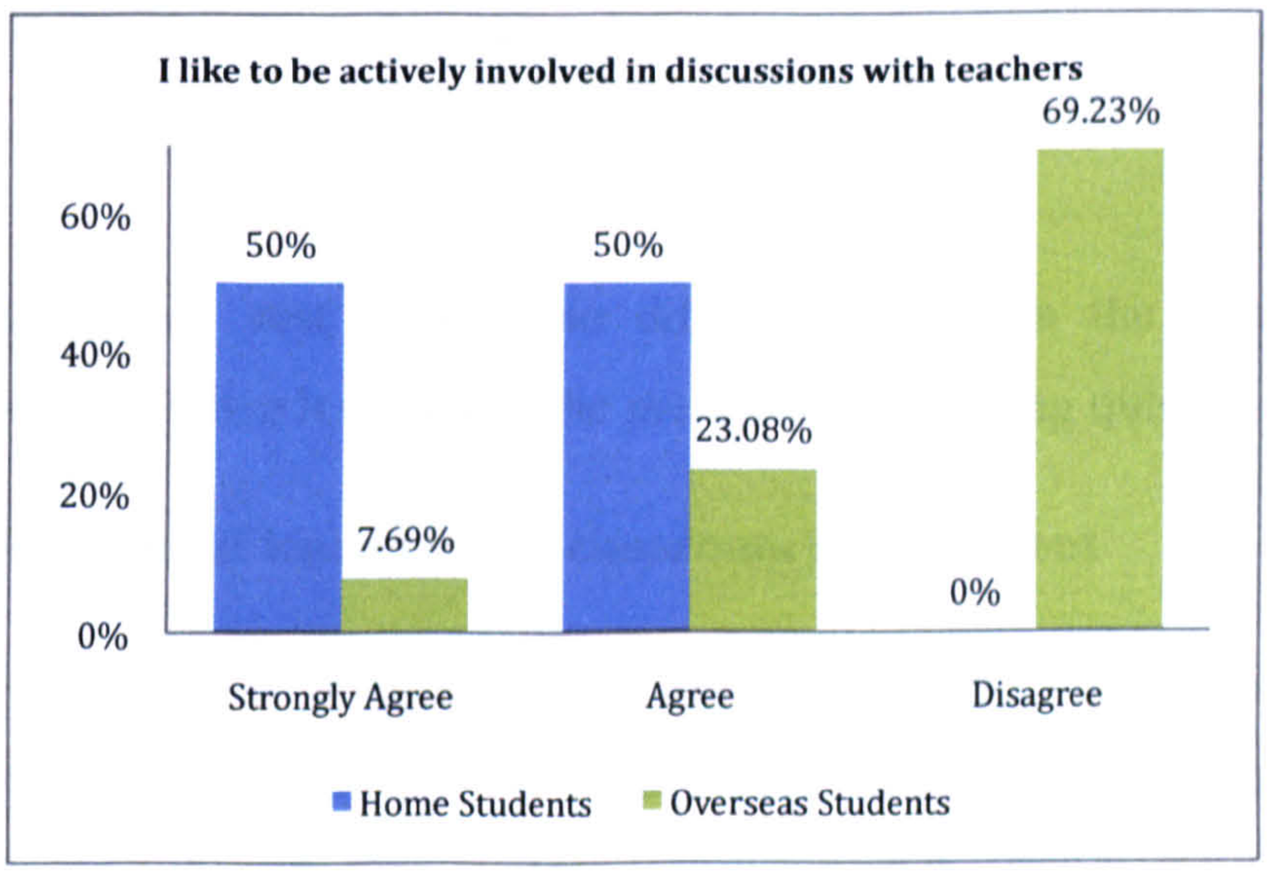

Figure 36 – Cultural Issues - Cross Tabulation (I like to be actively involved in discussions with teachers to find out more about topics vs. Student Status) [n=19]

2. A Mann Whitney U-test for differences between medians reveals that there is a significant difference (P=0.005) between the 'home students' and the 'overseas students' when it comes to the point of being able to disagree with teachers and express their own point of view. That is the 'mean rank' of home students (4.92) was significantly different from that of overseas students (12.35). [See Figure 37 for the statement: I like to be able to disagree with teachers and express my own point of view].

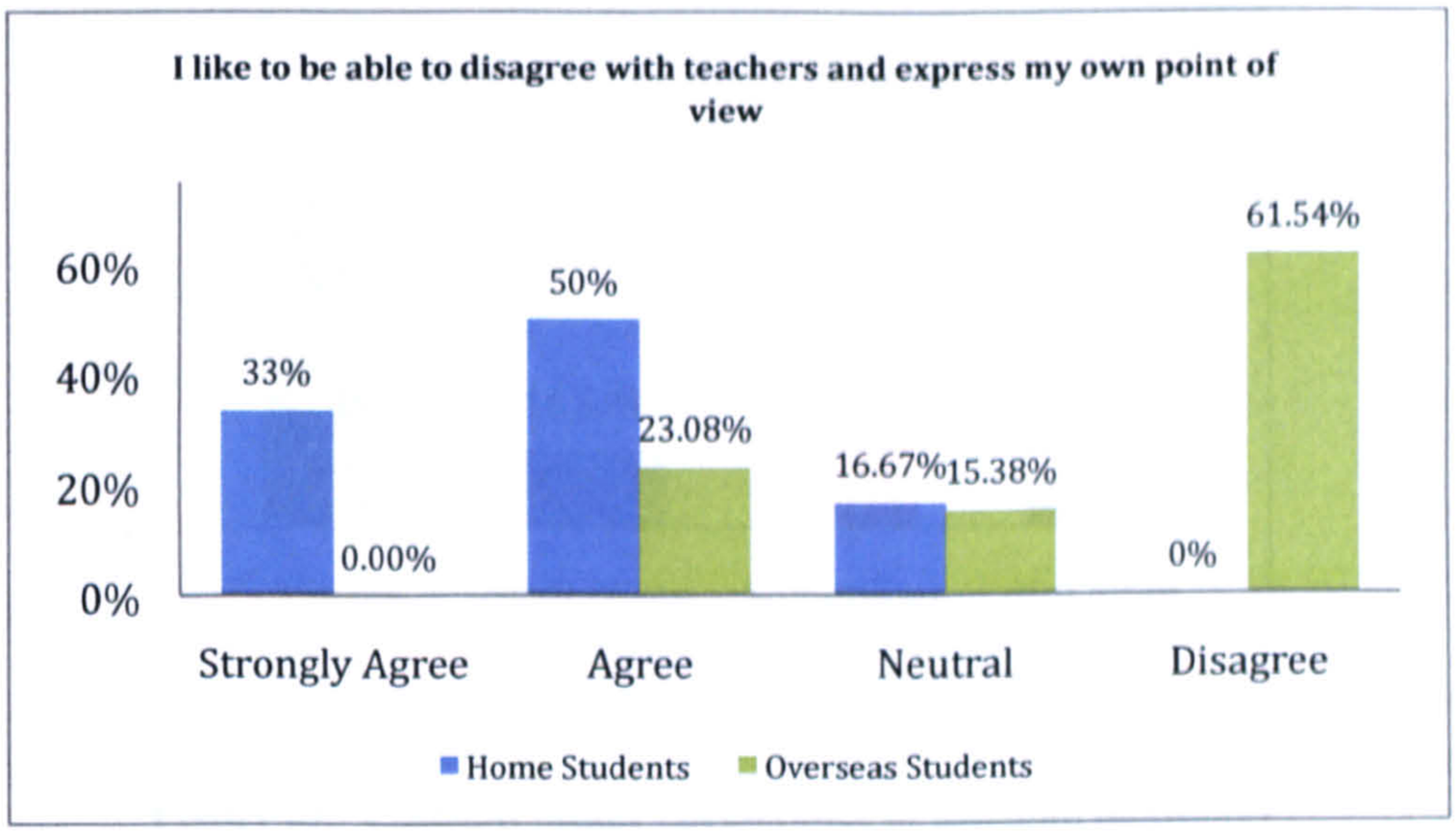

Figure 37 - Cultural Issues - Cross Tabulation (I like to be able to disagree with teachers and express my own point of view vs. Student Status) [n=19]

3. The Mann-Whitney test showed no difference between the student status groups (p=0.399) when it comes to the preference of staying quiet in the class.

3. Preference of Methods of learning in a classroom environment

The most preferred method of learning was lectures with handouts etc with 79% of students preferring it always or most of the time. Next to it was practical activities and sessions (58 % of students preferring it always or most of the time) and the last was discussion in face-to-face groups (with 52% preferring it always or most of the time and 48% preferring it sometimes or not very often) as shown in **Figure 38**, **Figure 39** and **Figure 40**).

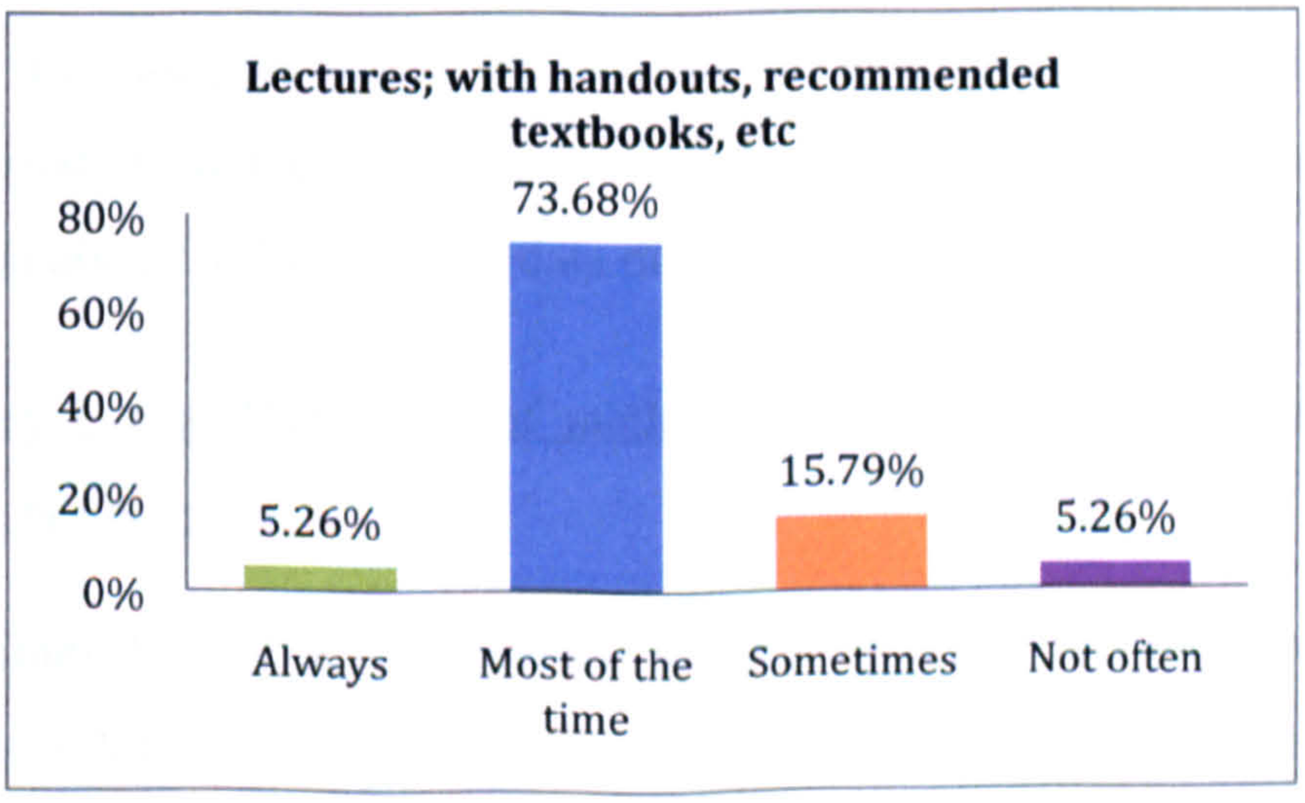

Figure 38 - Cultural Issues - Preference of learning modes (1)

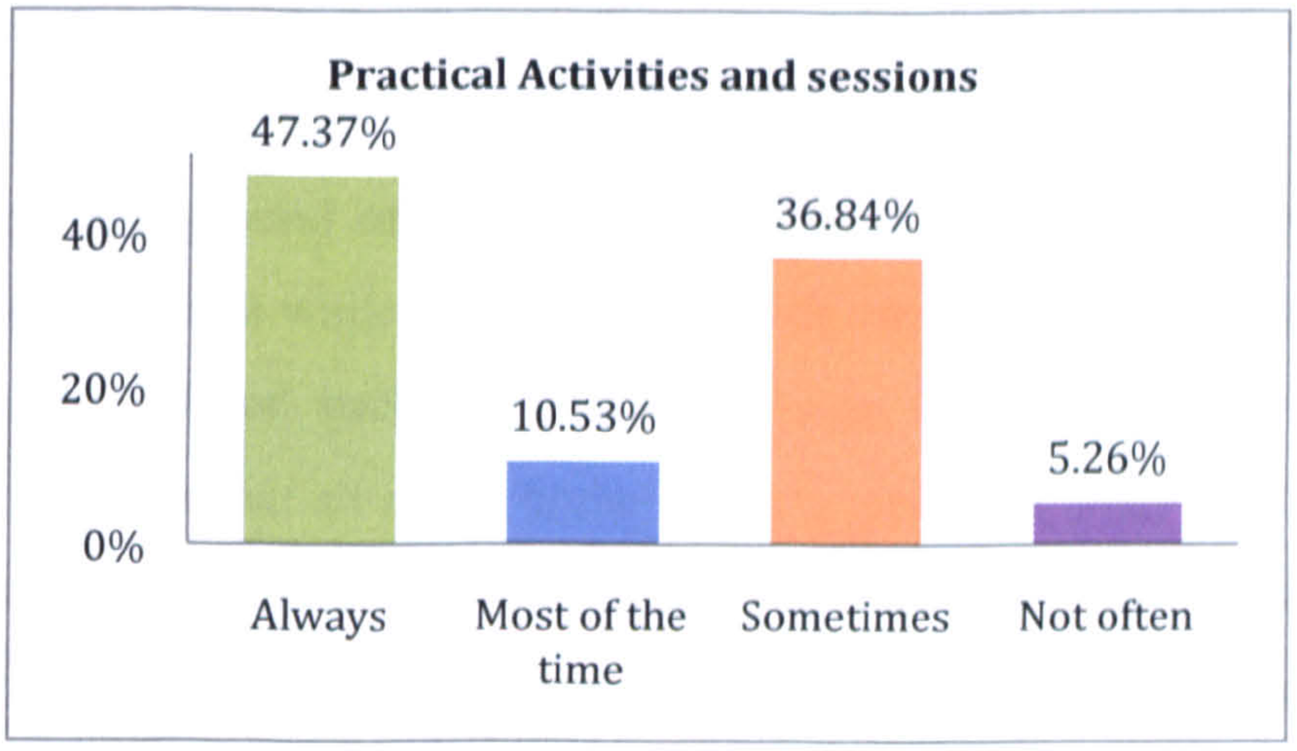

Figure 39 - Cultural Issues - Preference of learning modes (2)

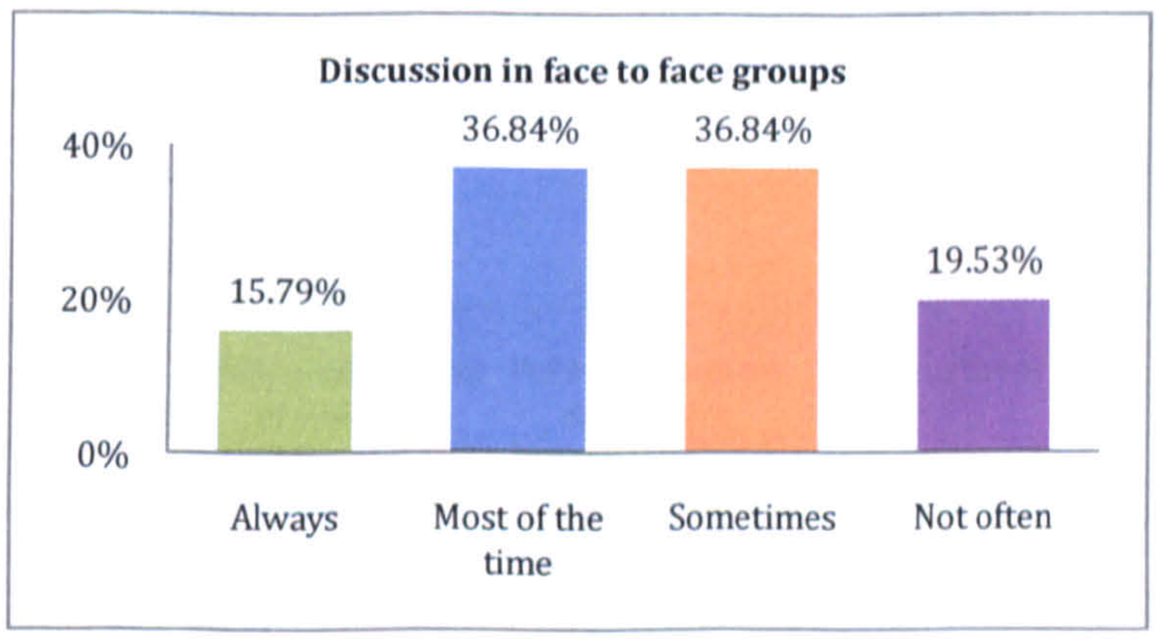

Figure 40 – Cultural Issues - Preference of Learning Modes (3)

Kolmogorov-Smirnov (K-S) normality test was done to assess the normality of the distribution of scores. A non-significant result (Sig value of more than 0.05) indicates normality. In this case, the Sigma Value came out to be less than 0.05 for each item, suggesting violation of the assumption of normality, therefore, non-parametric tests were used to analyse the Likert data (data distribution not being normal).

Mann Whitney U-test: Preference of methods of learning in classroom vs. Student Status (Home or Overseas)

A Mann Whitney U Test was conducted to determine any relationship between the student status (Home and overseas) and the preference of learning methods in classroom ($p < .05$). No significant difference was found between the home students and the overseas students.

4. When asked if they prefer to discuss about the course with fellow classmates of their own country/cultural background, fellow classmates of different country/cultural background or both of them, 79% stated that they preferred to discuss with both of them while 21% preferred to discuss with fellow classmates of their own country/cultural background (as shown in Figure 41). Also a further cross tabulation shows that all of the home students under the study like to discuss with the fellow classmates of their own country as well as of other countries but 21% of the overseas students prefer to discuss with only the fellow classmates of their own country/cultural background (Shown in Figure 42).

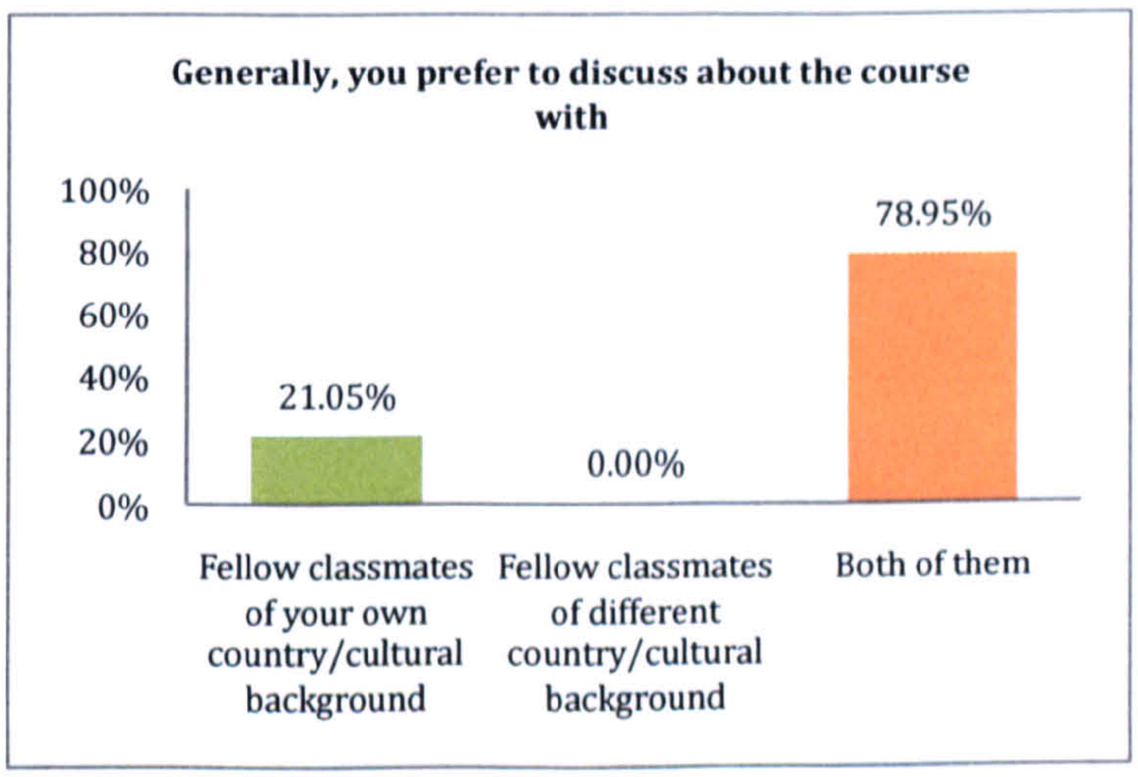

Figure 41 - Cultural Issues - Discussion with classmates [n=19]

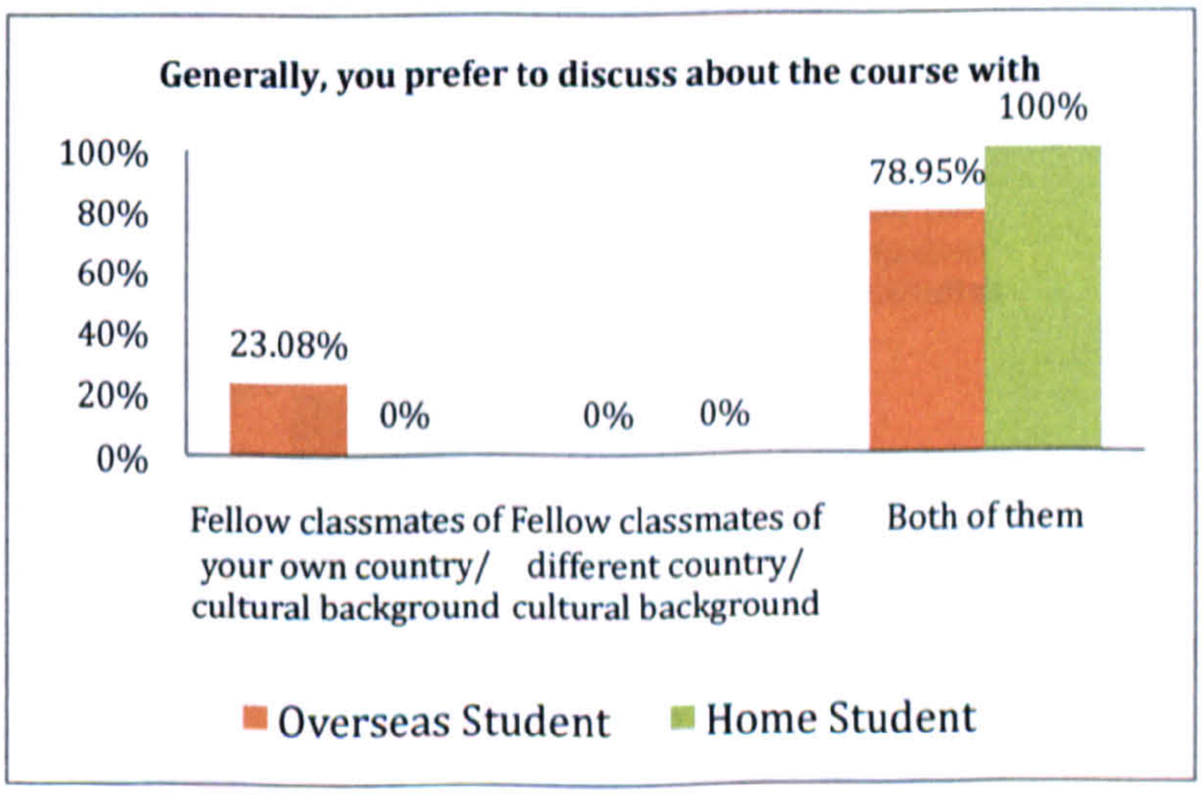

Figure 42 - Cultural Issues - Cross tabulation (Discussion with classmates vs. Student Status)

The role of ICT in a Multicultural classroom

Do you the think online medium can offer the potential for greater equality and participation from shy and passive learners; and learners whose first language is not English?

68% of the students agreed to the statement that an online medium can offer the potential for greater equality and participation from shy and passive learners while 26% of them were not sure (Figure 43). Also 74% of the students feel that the online medium can offer the potential for greater equality and participation from learners whose first language is not English (Figure 44).

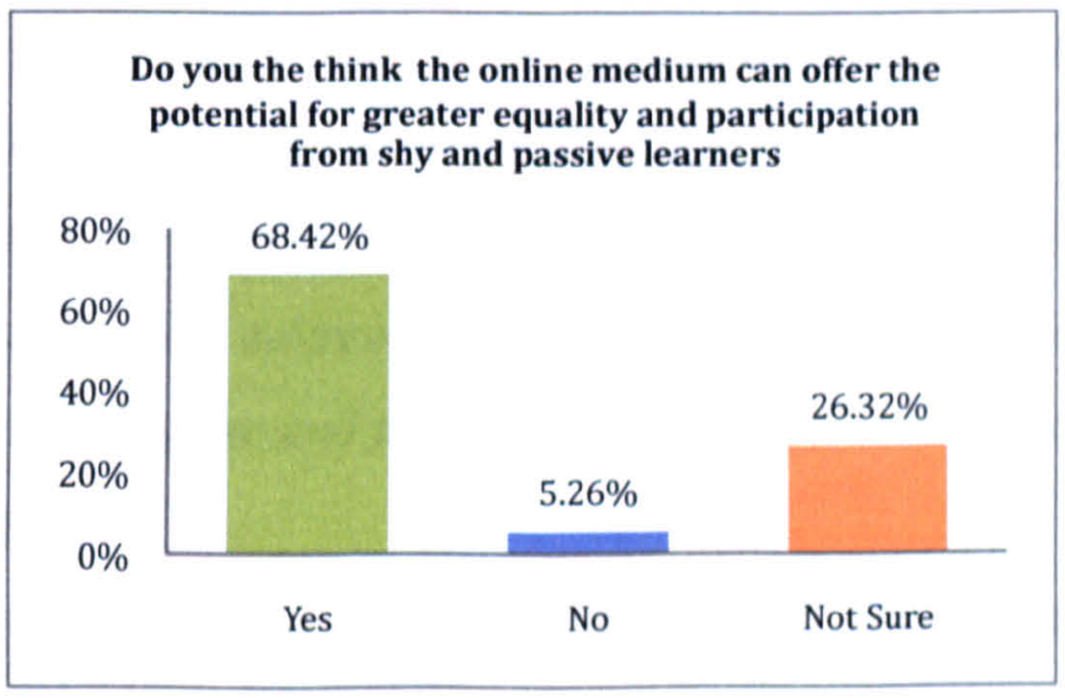

Figure 43 - Cultural Issues - Online medium offers potential for greater equality from shy learners

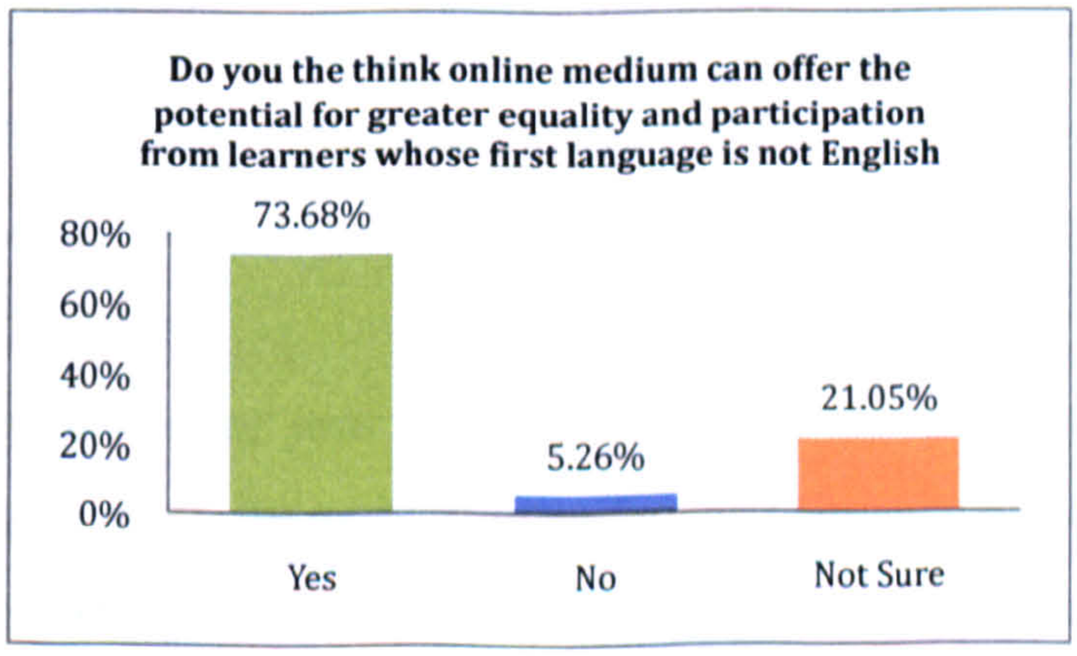

Figure 44 - Cultural Issues - Online medium offers potential for greater equality from learners whose first language is not Englsih

What do you think are the advantages of learning in an online environment?

This was an open-ended question and the following responses were collected.

- *Can be done at your on pace and also when you want to. You can also work for as long or as short a time as you feel like. There is also a chance to back track to basics appropriate to the subject that you are currently studying.*
- *Flexibility in doing work.*
- *Time to understand the things, if these are written Learn in your own space, privacy.*
- *It's free of time, and you can choose the things you want.*
- *we get a lot of information as online material. the info is useful for details study.*
- *Flexible time and space. most of all, if I do not understand about article, it is helpful to find similar articles in my language.*
- *Place and time are chosen by yourself.*
- *you have a broader source of information maybe. You are very computer literate after the course and this helps in any profession nowadays.*
- *More freedom.*
- *less expenses, study at a good university whilst staying at your country and working.*
- *More comfortable.*
- *easy access to resources and course materials.*
- *Anywhere anytime Access.*
- *The availability of course documents and other recourses 24 hrs is very helpful for me, as I generally prefer to work late night.*
- *can be done any time.*
- *more time flexibility.*
- *Work during a time of your own choice. Not under pressure that someone is overlooking or wants an answer immediately. Can even work from anywhere in the world. Can view material from a central location without the fear of loosing them. Can share learning.*
- *I can take my own time in completing tasks and the recourses are available which is useful. Group work can be managed easily.*
- *Flexibility of learning in terms of time and availability.*

What do you think are the disadvantages of learning in an online environment?

This was an open-ended question and the following responses were collected.

- *Can feel isolated and not part of a group. Problems seem greater as your are not 'all in it together'. ther is no one to bounce ideas off quickly and no humour that you get within a group, its a very sterile way of working.*
- *Difficult to get help. Slow to get help.*
- *There could not be interaction between Lecture and me, eye contact, hand and sign communication, listen is better, improving english by listening.*
- *It's difficult to control yourself and check the procedures.*
- *we dont get to interact with different views of other students. we dont get to debate on the topics and get clarifications.*
- *There is no interaction between classmates. Less understand and less interest.*
- *no face-to-face contact either with your tutor or fellow students.*
- *you need to have self discipline to study alone.*
- *Lack the face-to-face supervise.*
- *impersonal atmosphere isolation sometimes hard to reach your tutor or understand what he wants to say from an e-mail.*
- *No face to face interaction.*
- *busy people could miss something if not kept updated.*
- *lack of personal contact during discussion and unreliability of the current systems.*
- *Technology may be a problem. No face-to-face interaction. Can be time consuming and confusing if instructions are not clear.*
- *Sometimes I feel teachers don't respond that quickly in an online environment (through emails or forums). For getting a good timely response from them, I would prefer face to face contact.*
- *difficult to express your point of view during online sessions.*
- *A bit impersonal at times. The tone of writing is not obvious and creates misunderstanding at times. What is the server goes down before the exam day and I want a resource. Sometimes the systems are so complicated to use and crash frequently.*
- *Delay in response from tutors as well as classmates.*
- *Lack of face to face communication. My Lack of IT knowledge is sometimes a problem. Adequate training should be provided for using WebCT.*

Comparing classroom learning and ICT based learning in a Multicultural environment

1. 78% of the students agreed to the statement that 'in online learning you loose the impact of body language and facial expressions which normally aid communication', while 16% were not sure about it (Figure 45).

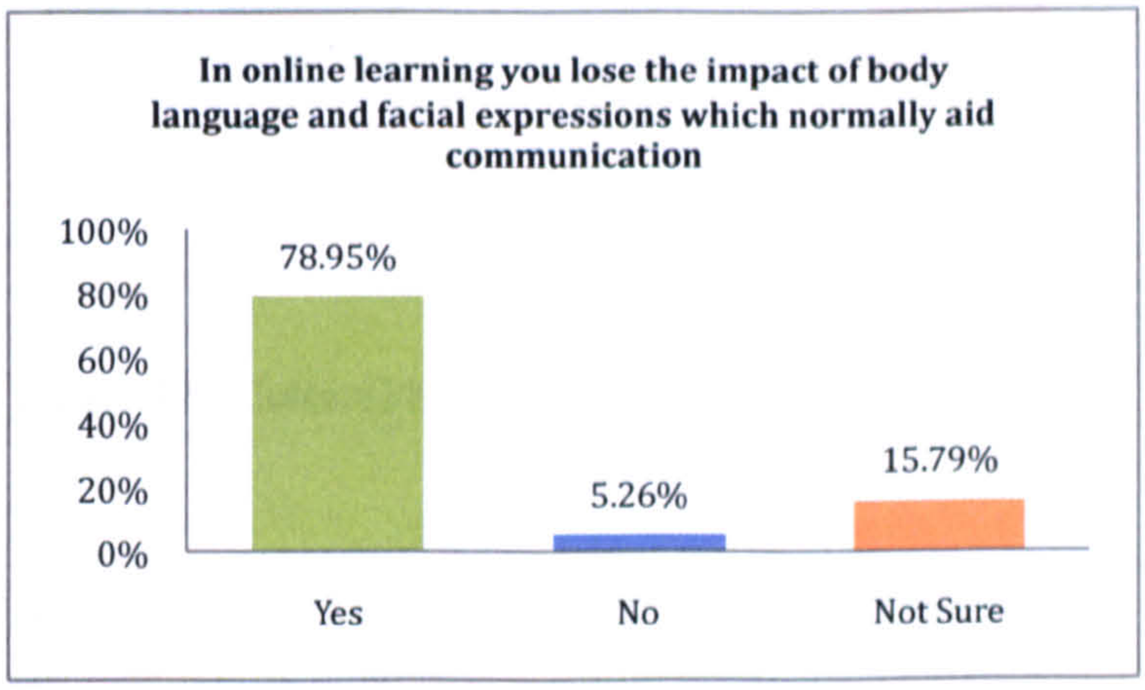

Figure 45 - Cultural Issues - Impact of body language

2. The students were asked if they agree to the statement that: *Online delivery of parts of courses can actually strengthen the bond with your fellow classmates and teachers.* 37% of the students disagreed to the statement while 42 % were not sure about it.

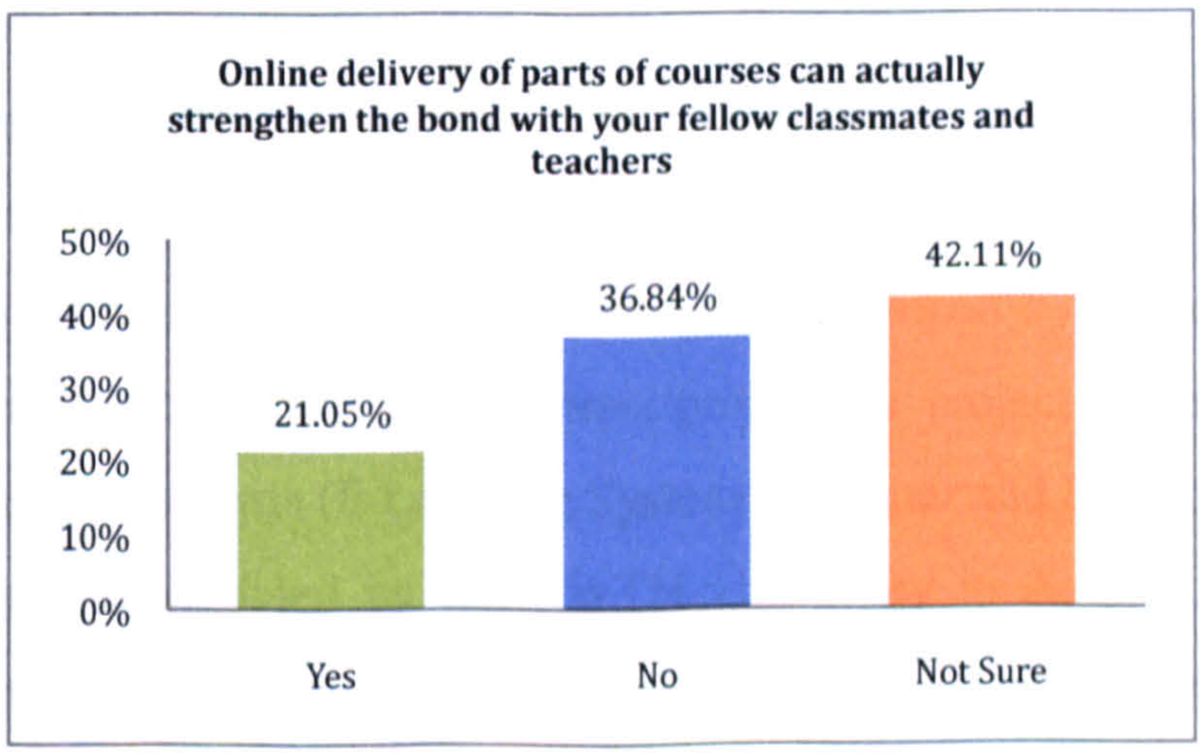

Figure 46 - Cultural Issues - Bond with fellow classmates and tutors

3. In general, what kind of learning mode do you think you would prefer?

74% of the students stated that they would prefer blended learning and 26% stated that they would prefer traditional classroom based learning while none of the students showed their affinity towards purely online learning.

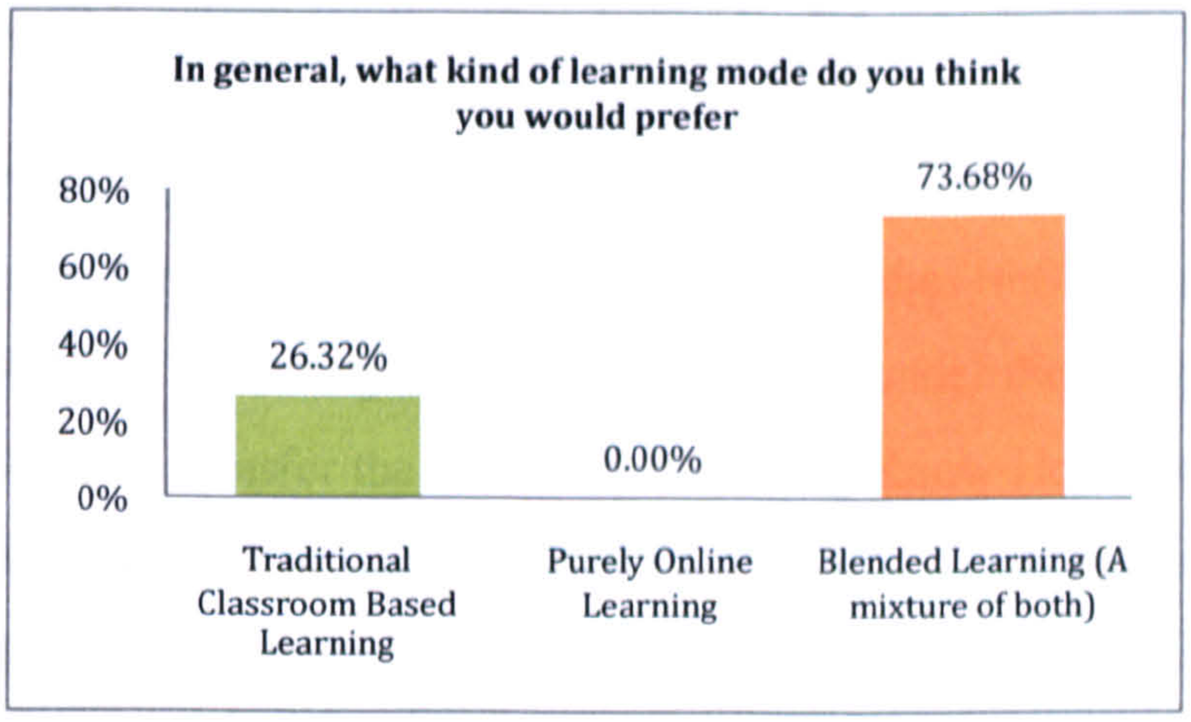

Figure 47 - Cultural Issues - Preference of learning mode

Cross Tabulation: Preference of Learning Mode Vs Student Status

Pearson Chi – Square ($p < 0.05$): Chi Square analysis revealed that there was no significant difference between the age groups and learning preferences, ($p = 0.516$).

6.4 Crossing borders through e-Learning - A Case Study on eSWES

6.4.1 Participants, Data collection and Analysis Procedure

After identifying culture as an issue to consider when developing e-learning strategy/solutions, the researcher wanted to see if cultural differences are considered when an e-learning course/ system/ environment is developed by one culture and used by another. After searching for such courses/projects, a project running in Germany under the Tempus programme (E-Learning System for Water and Environmental Studies (eSWES) is a project initiated by the RWTH University in Aachen, Germany) was identified for further investigation of this issue. This part of the study was carried out to understand the role of e-learning in cross border education between two countries (Germany and Egypt) with different cultural, technological, educational and pedagogical backgrounds. For the data collection, the researcher personally visited the site (Germany) and conducted Interview with Dr. Sewilam (Deputy Director of eSWES Project), University of Technology, Aachen, Section of Engineering Hydrology. Project Reports and Protocols were also shared with the researcher. In this research,

unstructured interview was used which helped in ensuring a smooth and friendly atmosphere while taking the interview (See Appendix F for the Interview transcript).

6.4.2 Research Findings

E-Learning System for Water and Environmental Studies (eSWES) was a project initiated by the RWTH University in Aachen, Germany under the Tempus programme. The general idea was to transfer the available eLearning Know-How from the European Universities to the Egyptian Universities (eSWES Project). There were four partners for this project – 2 departments from the University of Aachen, Germany; 1 from Italy and one from Egypt (Zagazig University), which is the target partner. Their idea was to move slowly from face to face classroom lectures to wholly e-based system. The project was initiated because of the challenges in education faced by Egyptian Universities. Dr. Sewilam in the interview said *"In Egypt, we need e-learning more than in Europe. In Europe we have not more than 20-30 students in a classroom-based lecture. Each student has the chance of interacting directly with the professor. In Egypt, there are around 500 students sitting in a classroom and there is no possibility of any kind of communication between the lecturer and the students. There are no enough places. Most of them are standing. They don't have a microphone in the classroom so sometimes the students cannot even hear the Lecturer. And even if the students are able to hear the lecturer, the fact that 500 other students surround them makes them forget the lecture. If the same lecture is present online and they can view it anytime of the day from home or from somewhere else it would be very helpful for them and I am sure if the students accept his idea they will encourage other professors to do the same."*

The above project was taken up as a case study to highlight the issues that need to be considered while designing e-learning solutions for a country, which is culturally different from the provider country, and also to highlight the important role of online learning in the process of building a unique cross-border educational environment between two countries. The reflection and discussion is based on the Interview with Dr. Sewilam, University of Technology, Aachen, Section of Engineering Hydrology; project reports and the literature review.

The Project outline

The proposed project intention was to improve the teaching and learning processes in Egypt by introducing electronic learning techniques in the department of environmental

engineering, Zagazig University (Egypt). The project had a timeline of 3 years (2004-2007) with the following objectives:

- Since the main aim is to introduce an eLearning system, the targeted departments must have a reliable IT-infrastructure. Therefore, the first objective of the project is improving the IT-infrastructure of both departments.

- The second objective of the project is to update and digitalize the available, teaching and learning materials of the targeted courses.

- Developing the multimedia (blended) courses is the third objective to be achieved. The multimedia courses will be based on moderate constructivist eLearning theories and appropriate situated exercises using the digitalized materials (objective 2).

- Powerful web-based learning system is the fourth objective of the project. It is not the goal of this project to develop a complete new eLearning system from scratch but to utilise an existing platform.

- Enhancing IT skills of academic staff as the fifth objective is a significant issue to carry out multimedia lectures and ensure the project extension and sustainability.

- In order to ensure the sustainability and extension of the eLearning system, the sixth objective is to form a team to administrate, maintain and extend the system.

Cultural Differences between Germany and Egypt

Geert Hofstede assigned a score/index to each country (in his study) on the five cultural dimensions identified. The formula for calculating the index for each dimension was derived which was intended to get index values ranging from 0 – 100. Of the five dimensions – individualism, power distance, masculinity, uncertainty avoidance, and long-term orientation – three go a long way towards explaining the student behaviour. Based on these index values for the three dimensions - Power Distance, Individualism and Uncertainty Avoidance for Egypt and Germany, the researcher has plotted the following graph, which compares the scores for the two countries.

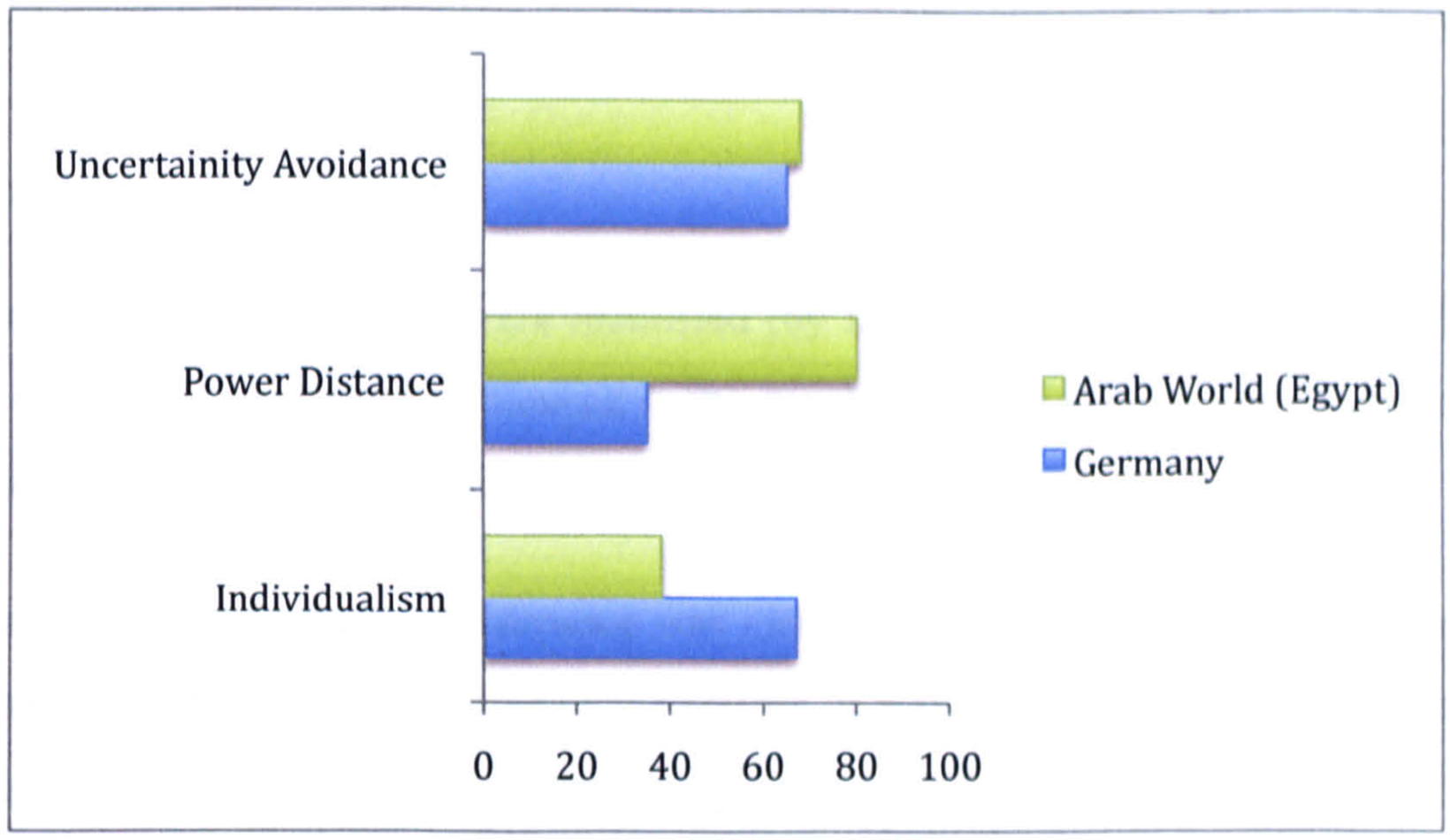

Figure 48 - Cultural Issues - Hofstede's Dimensions (Germany vs. Egypt)

The above graph shows that the two countries are quite dissimilar in terms of power distance and individualism; but both being high on uncertainty avoidance. Egypt is a high power distance society (80) while Germany is a low power distance society (35). Egypt is a collectivist country (37) and Germany is an individualistic country (68). "*Collectivism implies sensitivity to the social environment and the focus on the needs of the in-group members over the needs of the self, which could lead to a lack of self-directedness and a sense of passivity among students*" (Aoki, 2006). Therefore, Egyptian students may lack the necessary autonomy and motivation required to study online. "*Although the power distance dimension mainly affects the manager - employee or student - teacher relationship, it is also a factor within in-groups, which are also characterized by a relatively rigid hierarchical structure. In high power distance cultures, the teacher's position is highly respected and he/she is expected to strongly guide the student to knowledge. A "teacher centered" lecture format or a small group teacher led class is more conducive to this view of learning than a student-centered "teacher as facilitator" approach*" (Aoki, 2006). Large power distance and low individualism are the predominant characteristics for Egypt and therefore, the students there are more likely to expect and accept more structure and less flexibility in their learning environments, more step-by step instructions in their course, more group activities (preferably face-to-face) and less individual activities, less autonomy and control over their learning environment. The question that comes here is that whether Germany, which is culturally different from Egypt, would be able

to provide e-learning environment, which is not biased and is culturally sensitive?

Risk Analysis of the Project

The following critical issues were identified (by the Project Partners) as probable risk factors that can pose to be a bottleneck in the development of the cross border e-learning system in Egypt at Zagazig University:

Educational and Cultural Difference was identified as one of the barrier to introduce e-learning into Egyptian Universities. Therefore, it was decided that the transition from traditional classroom teaching environment to an e-based system would be done gradually over a period of time.

> "*The first step would be to have digital handouts for the students (simply providing the material in digital format instead of handing them paper based lecture notes). This would make the transportation of the lecture handouts and material for the students easier.*
>
> *The second step would be to change the way of teaching. Blackboard will stay but some power point presentations will also be included during the lectures (which are till now not available).*
>
> *After this, the third step would be implementing Impatica[1] to make the lectures available for viewing online even after the lecture is finished or even when the students are at home. The staff will be trained to record the lectures (video and audio) and develop these web-based lectures. In addition to this, the staff will be trained to develop their own interactive exercises using computer animation and simulation.*" (From Interview Transcript in Appendix H)

Teacher's minimal experience in the application of computers in education and resistance to use online tools in their teaching was identified as another barrier. The project collaborators carried out a survey in Zagazig University and realized that the staff members do not understand the meaning of e-learning and not all of them are committed to learn this mode of teaching. Teachers do not realise that technology is no

[1] Impatica - Easily converts media-rich presentations for online delivery (http://www.impatica.com/)

more a barrier today and it is up to them to use it appropriately to meet the desired educational goals. There are still many detractors for the use of computers in education in countries like Egypt. One of the primary reservations is the concept that computers will eventually replace the traditional teacher or lecturer. Other reasons include the reluctance to change their mindset to accommodate something new in the curriculum. This barrier/problem was decided to be dealt in the following way:

> *"Depending upon the teacher's IT knowledge, commitment, motivation and interest, few academicians will be chosen to be trained. It is assumed that the rest of the staff will be attracted towards e-learning once the students start using and demanding more of it. According to Dr. Sewilam a fully developed system will not be delivered to them instead the teachers would be trained in Germany to develop their own system according to their needs. A second training course will be held in Egypt where the academicians and technicians from Germany will go to see what problems they are facing etc".* (From Interview Transcript in Appendix H)

> They observed during video recording of the lectures in this department that the lecturer was under pressure and was distracted by the fact that he his lecture is being recorded. So to avoid this distraction, they would not record the lecture every semester but will use the same recording until and unless some changes/updates are required in the lecture. This will certainly help the teachers in overcoming their fear to teach with the aid of computers. (From Interview Transcript in Appendix H)

Technical limitations of virtual education were identified as another barrier. There is a big difference between the IT infrastructures of the two institutions (Germany and Egypt). A survey was carried out to find out the available software and hardware in Egypt. This helped them in understanding the IT infrastructure they would require in order to implement the system including the number of computer systems.

> *"An inbuilt platform (Moodle, Impatica) will be used for the Egyptian partners. This is because most of the students do not have Internet connection at their home. Even if they have Internet connection, the speed is quite low. So if they develop a complicated system, who is going to use it? They will be using*

platforms, which will not require high speed Internet connection." (From Interview Transcript in Appendix H)

From the above risk analysis, it is observed that the project did consider the cultural difference between the two countries to some extent in order to avoid any bias in the system. The e-learning system took the form of blended learning with teachers always there to assist students (who may not be that comfortable with this new mode of delivery initially). The teachers were trained in using ICT tools in their teaching and the learners were always involved in the process of developing the system through 'state of readiness' questionnaires and 'feedback questionnaires'. The staff training and the learner's involvement throughout the project involved suggestions and discussions between the host and the target audience (staff and learners), which led to proper adjustments according to their needs. Training of teachers was an important step in the cross cultural transfer of knowledge/expertise as Prof. Nacken (eSWES, 2008) rightly said that the idea was to help them cross the river by training them to swim and not by providing them a boat. Considering the history of educational deprivation and segregation of the participants, who have studied at institutions where it was much difficult to even get the lecture notes, their approach to a VLE was needed to be a gradual process of initiation. This was particularly noted by the project partners and the process of transforming from traditional classroom face-to-face teaching to technological oriented blended teaching was done gradually over a period of time. This was important to enable the students to adapt to the new environment slowly. Another 'cultural barrier', which was taken into account, was the language used for instructions in online system. The system developed was based on Moodle, which supports Arabic language.

The project reports that one of their objectives was to build the multimedia courses on moderate constructivist e-learning theory. The researcher did not had access to the developed system and therefore, at this stage, it is impossible to know how well the environment actually fits the diverse needs of learners because the learners in Egypt might be used to a more teacher centred (behaviourist) style of learning. Whether the courses based on new learning theory would be accepted by them or not is a question, which only they can answer. But at the same time, it is important to note, that the assessment of learning styles and state of readiness of learners was initially done by the project partners and therefore, this could have shaped the e-learning system according to their preferred style.

The project has now been completed and is reported to be a success. The target audiences (Egyptians) have started using the system and the interactive multimedia modules have helped the students understand complex scientific processes. As an added value, the trained teachers are capable of training new students and all the members of the working group. They are able to do the entire necessary job that is required in an e-learning process. The teachers in Egypt are very satisfied with this project, as this has enabled them to have technological skills along with teaching skills (eSWES, 2008).

6.5 Reflection and Discussion

The literature review and the survey suggest that there are differences in the attitude and behaviour of students from different cultural backgrounds. More than 50% of the overseas students (in the study) agreed that they prefer to stay quiet in the classroom because of the fear of speaking incorrect English. Also 38.5% of them found seminars and discussions difficult to follow and understand. Further cross tabulation showed that the 'overseas students' were less likely to be actively involved in discussions with teachers to find out more about topics. The Mann Whitney U test also suggests that the 'overseas students' may be less likely to be able to disagree with teachers and express their own point of view. The statistics suggest that the attitude and approaches of students towards learning and communicating vary from culture to culture and therefore there is a need for developing new and appropriate pedagogies in the context of multicultural educational setting. Information and communication technology brings people around the world together in a global village where new technologies open up new options to bring people together and some of the cultural disadvantages of face-to-face learning may be eased. Some advantages of integrating E-learning into a multi-cultural educational setting have been suggested through this research.

1. Flexibility of choosing language of instruction

The survey indicates that 74% of the students feel that the online medium can offer the potential for greater equality and participation from learners whose first language is not English. 53% of the overseas students stated that they would prefer interacting with their fellow classmates and tutors in English as well as in their native language.

Language shock is one of the most common phenomena that students experience when adjusting to their new environment. "*Language shock is the anxiety which occurs when*

an immigrant first enters a community where he or she does not speak or is not proficient in the dominant language" (Miller and Endo, 2003). "*The chances for successful cultural adaptation are better if the teacher is to teach in the student's language than if the student has to learn in the teacher's language, because the teacher has more power over the learning situation than any single student*" (Hofstede, 2001). This is not possible in a multi-cultural traditional classroom setting where the teacher can teach only in a common language (which is English in the U.K). Such a scenario is feasible in a virtual-learning environment where students can be guided and given instructions in their own native language as well as in English or another language. Language is a key issue in any cross border educational environment. The privilege of studying in one's first language and of conversing with others in one's first language is not available to everyone involved in cross border education but this is something which could be explored in an online environment.

However, it is important to note here that the very fact that the overseas student chose to come to a different country for education shows their inclination to adapt to that country's education system, which includes the instructional language. At the same time, the survey also reveals that (if given a choice) the overseas students would like to study/communicate with tutors/fellow classmates in their native language. This language barrier problem could be dealt with in an e-learning environment (Some solutions have already been applied in many cases in connection with the design and production of learning materials. Videoconference lectures can already be organised with some creativity in a multilingual mode by providing simultaneous interpretation through headphone sets). The researcher would like to state here that there is a possibility of such a situation to be chaotic and problematic wherein the instructor is unable to understand the context of the student's native language usage (even after being translated into English) and vice versa. Hence, even though, there is a possibility to integrate language translation systems within VLE's, the prospect of a potentially confusing situation should be taken into consideration before implementing the same.

2. *Risk free*

The survey indicates that 68% of the students agreed that online medium can offer the potential for greater equality and participation from shy and passive learners. Students taking an online course enter a risk-free environment in which they can try new things and make mistakes without exposing themselves; after a failure, students can go back

and try again (Urdan and Weggen, 2000). Block and Dobell (1999) note that e-learning allows the shy learner, the insecure learner, and the verbally challenged learner to flourish in the 'blindness of the learning engagement'. Also Kearsley (1997) argues that the computer-mediated communication involved in e-learning minimises discrimination and prejudice that can arise in face-to-face settings.

3. *Availability of extra time*

The asynchronous nature of e-learning allows students to take their time in responding to teachers' queries and discussions, whereas in classroom contexts often the conversation moves on before they can understand the question or the discussion. Some of the responses to an open-ended question asking about the advantages of an online learning environment are given below:

- *Can be done at your on pace and also when you want to. You can also work for as long or as short a time as you feel like.*

- *It gives me more time to understand the things, if these are written.*

- *Flexible time and space. Most of all, if I do not understand about article, it is helpful to find similar articles in my language.*

- *More time flexibility.*

- *Work during a time of your own choice. Not under pressure that someone is overlooking or wants an answer immediately.*

- *I can take my own time in completing tasks and the recourses are available which is useful.*

- *Flexibility of learning in terms of time and availability.*

Jin, Mason and Yim (1998) argue that the Internet can bridge cultural differences and illustrate this with the following example:

"Most Chinese, even if they speak English, are much weaker conversationally than in reading and writing. Consequently, if something is written down and a Chinese is

given the time to read and to produce a written response, he/she will be able to come up with reasoned well-though-out response."

Apart from the above advantages, a few disadvantages of e-learning were also noted through the survey. 78% of the students agreed that online learning is not so good because you lose the impact of body language and facial expressions, which normally aid communication. Also 37% of them did not feel that online delivery of parts of courses could actually strengthen the bond with their fellow classmates and teachers. 74% of the students stated that if given a choice, they would prefer blended learning; 26% stated that they would prefer traditional classroom based learning while none of the students showed their preference towards purely online learning.

Some of the other disadvantages (from the open ended question) noted were:

- *Impersonal atmosphere; isolation; sometimes hard to reach your tutor or understand what he wants to say from an e-mail.*
- *Lack of personal contact during discussion and unreliability of the current systems.*
- *Sometimes I feel teachers don't respond that quickly in an online environment (through emails or forums). For getting a good timely response from them, I would prefer face-to-face contact.*
- *A bit impersonal at times; the tone of writing is not obvious and creates misunderstanding at times.*
- *What if the server goes down before the exam day and I want a resource. Sometimes the systems are so complicated to use and crash frequently.*
- *Delay in response from tutors as well as classmates.*
- *Lack of face-to-face communication; My Lack of IT knowledge is sometimes a problem. Adequate training should be provided for using WebCT.*

In the previous paragraphs the potential of ICT have been emphasised. On the other hand, such an online approach to communication would not entirely sweep away cultural differences. One of the limitations in current instructional design models is that they do not fully contextualise the learning experience, and are themselves the

products of particular cultures (McLoughlin and Oliver, 2000). The design of Web-based instruction is not culturally neutral, but instead is based on the particular epistemologies, learning theories and goal orientations of the designers themselves. Recently, theorists have argued for a cultural dimension in the design process and the need to provide culturally sensitive learning environments (Reeves & Reeves, 1997; Collis, 1999; McCahill, 1998).

Since most of the VLEs (Virtual learning Environments) are developed by the individualistic countries they may be biased towards particular aspects of teaching and learning. How the online environment is presented is again dependent on the developer and thus it may have some culture bias. Consider, for example, the following:

- Suppose an online system is developed by some developers/designers from a high power distance society. Their culture may have an impact on the user access restrictions, which they employ in their system; i.e. who has rights of access and to how much information. The design may give students less access and teachers much more access. While if such a system is developed in a low power distance culture, the designers may want to keep it transparent with implicit freedom given to everyone to move around the site.
- Also, even after the online system is up and running, it may be perceived differently by different students. For example, a student from an individualistic country may not be interested in taking part in a group activity as he/she may place more emphasis on personal goals than group goals or he/she may not be motivated by group achievement.
- Student-centred online lectures and participatory-based classes may represent a totally new way of learning to students as previous education experiences in their home country may have featured only the traditional, lecture-based, teacher-led approach. Thus these students may be reluctant to participate actively online. "*The Chinese e-learner may feel that they are subservient to a teacher and this could prove problematic when no physical tutor exists*" (Friesner and Hart, 2004). Chinese culture is collectivist and often depends upon informal chains of communication. Therefore open discussion albeit in forums or web casts could see an infringement of cultural values (Can, 1999 cited in Friesner and Hart, 2004).
- Even students who are or who become familiar with English or with its standard spoken dialects may be unfamiliar with the written genres and discourses needed for

powerful communication in academic and economic arenas. Thus the contradiction: The Internet extends possibilities for international communication but may reinforce unequal opportunities to have a real voice, as most of the world's people find themselves lacking access to the particular language, dialects, genres, or discourses privileged in Western society (Warschauer, 1999). A 1997 study showed that fully 82% of the Web pages in the world were in English (Cyberspeech, 1997). This skew is partly a result of the Internet being born in the United States and still dominated by users in that country and partly a result of the general dominance of English as a language of international communication in academic, business, and entertainment spheres (Kachru & Nelson, 1996; Pennycook, 1995). The Internet privileges those who use the English alphabet compared to other alphabets or writing systems, those who have keyboarding skills compared to those who don't, and those who have money to purchase computers compared to those who are poor (Warschauer, 1999).

Crossing borders through e-Learning - A Case Study on eSWES

It is true that trans-border education can widen access to quality higher education. "*There are many countries (e.g., Malaysia, China) that have deliberately invited, under clear regulations, foreign higher education institutions to move into their country to enlarge the higher education provision, which the country itself is not able to develop*" (Wende, 2002). It seems the opportunities of globalisation appear to be very attractive, certainly for higher education institutions that have the autonomy, technology and opportunity to help other institutions. A similar initiative taken up by RWTH Aachen under the Tempus programme to develop e-learning solutions for Egyptian University has been described in the last section. Educational and Cultural differences were taken into account while delivering and implementing the e-learning solution and proper risk management and assessment of learning styles and timely feedback has led to the success of the project. "*Instructional design cannot, and does not, exist outside of considerations of culture*" (Henderson, 1996). Theories of learning and of cultural difference suggest that the effectiveness of e-learning systems/environments may be reduced where such systems are transferred into cultures for which they were not designed (Dunn, 2007). Therefore, cultural issues should be borne in mind while transferring e-learning know how to another culture. E-Learning, when an instructor is

from one culture and students are from another, requires awareness of cultural influences on both sides (Lemone, 2005).

6.6 Conclusion

From the above literature review, survey and critical reflection, it can be concluded that there are cultural differences associated with teaching and learning in a multicultural classroom and therefore it is vital to understand and propose new paradigms of teaching in a multicultural educational setting. Most of the online learning environments are designed and developed in North America; but learning theories, learning styles and research work that applies in one culture may not necessarily apply in another (Hofstede, 2001). Therefore some kind of modification in these learning environments is needed to suit to a majority of multicultural students.

Reeves & Reeves (1997, p. 63) outline a dozen pedagogical dimensions that can be used to design interactive multimedia tools and learning environments. Among these dimensions is cultural sensitivity, which is explained as follows: 'Web-based instruction should accommodate diverse ethnic and cultural backgrounds among the learners expected to use it'. Course developers or instructional designers should be made aware of the inter-cultural design issues that may arise in an online environment. Instructional designers may sometimes therefore have to incorporate not one, but multiple pedagogies, for example both instructivist and constructivist depending upon the cultures they are providing resources for, and be aware of the multiple ways in which each culture could interpret instruction.

A few options for considerations while delivering an online course (to make it culturally sensitive) are on the next page:

1. Display the text of narration

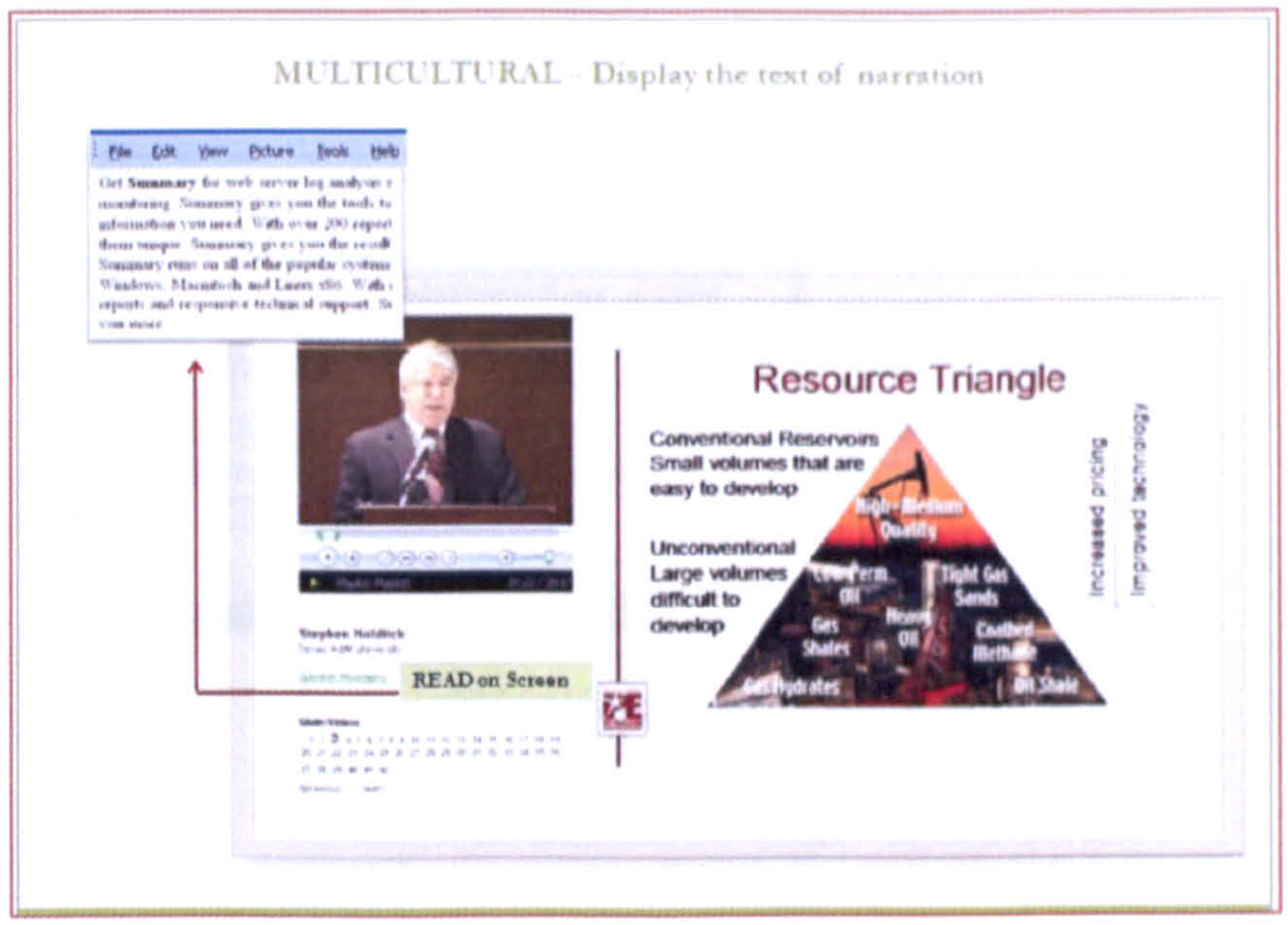

Figure 49 - Cultural Issues - Display text of Narration

2. Provide multiple versions

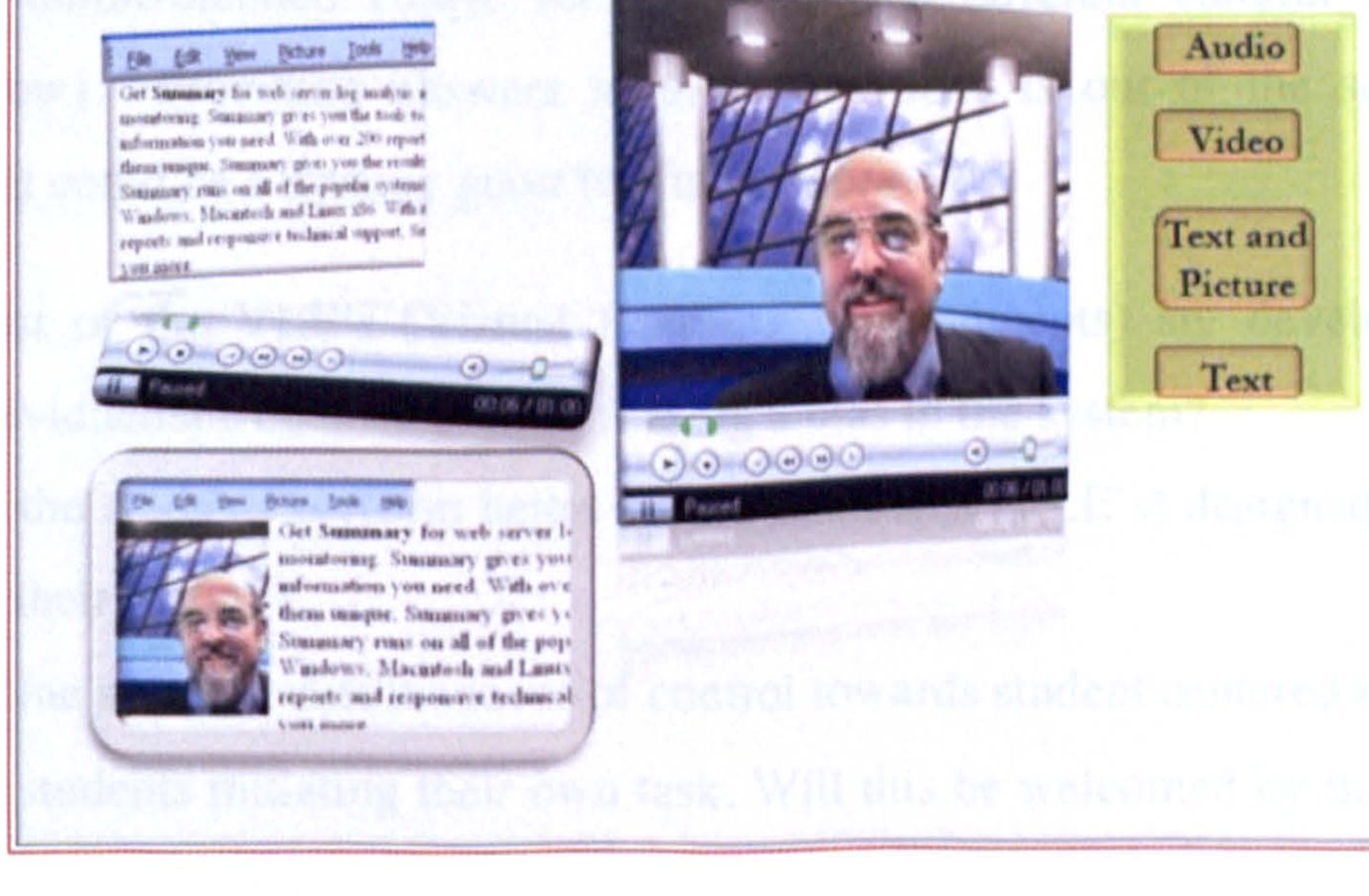

Figure 50 - Cultural Issues - Provide multiple versions

3. Provide Language Selection Options

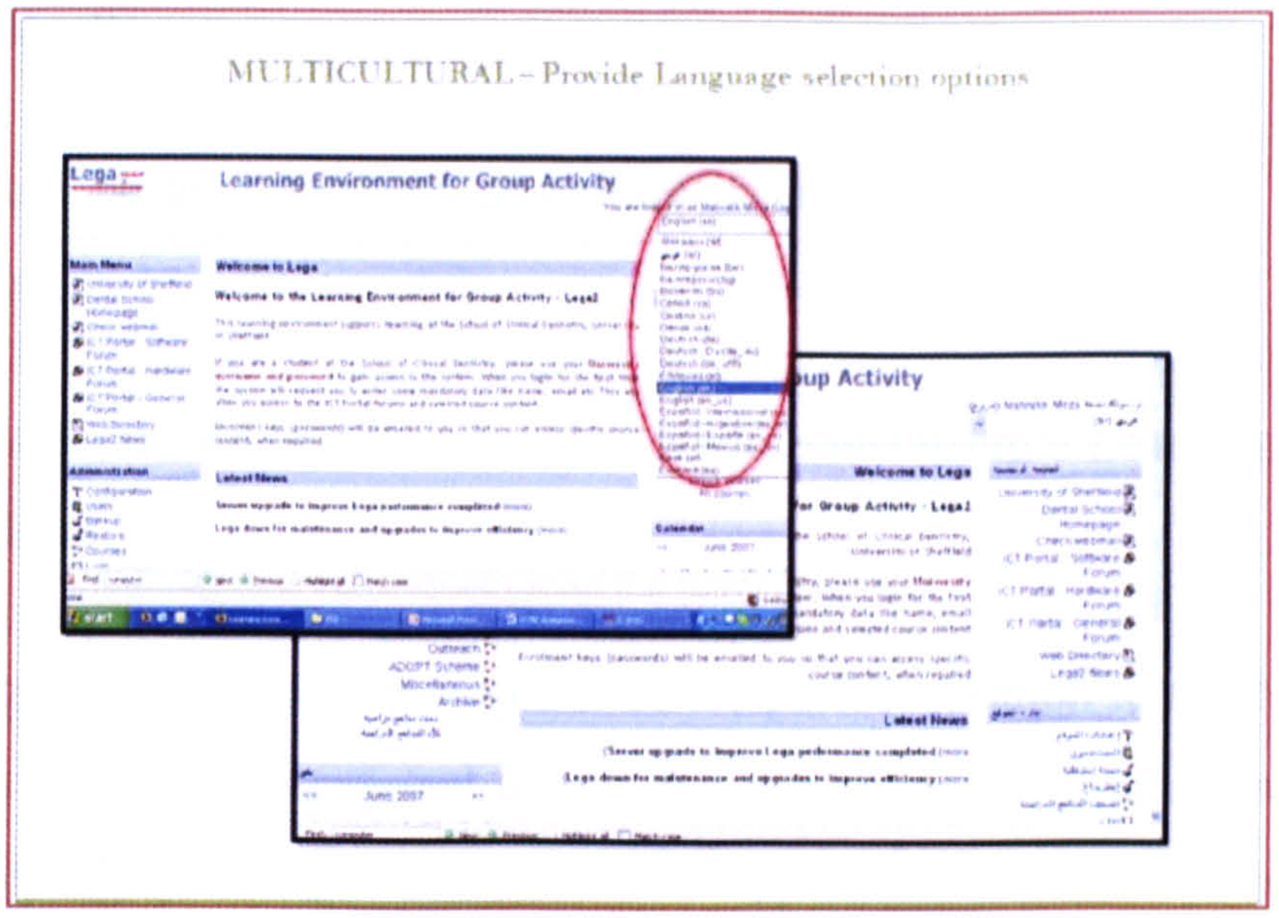

Figure 51 - Cultural Issues - Provide Language Selection Options

Apart from providing answers to the research questions, this part of the research has also identified some important questions that need to be addressed before attempting to design an online/blended course for students from different cultural backgrounds (given below). Providing answers to these questions is out of the scope of this research but could be a starting point for future work.

1. Most of the VLE's (Virtual Learning Environments) are developed by the individualistic countries. Does it bring a bias in the system?
2. Do the students perform better on the interfaces (VLE's) designed specifically for their culture?
3. Online systems shift the locus of control towards student centered learning with the students initiating their own task. Will this be welcomed by the collectivist culture (teacher-centered)?
4. Should we develop different web interfaces and courses for different cultural groups?

To conclude this chapter ;

- Course developers or the online system designers should be trained to understand the inter-cultural design issues for developing a system that is to be used internationally as well as locally.

- There should be an awareness of cultural issues that may arise in an e-Learning environment.

- Cultural issues should be borne in mind while transferring e-Learning know how to another culture.

- E-Learning in its present state may not be the perfect solution to remove the cultural differences from the educational system but it may help in minimising some of the cultural misunderstandings. A more blended approach (a combination of technology-based materials and face-to-face sessions) may help in accommodating a variety of different learning styles of students with different cultural backgrounds.

- 'One-size-fits-all' doesn't hold true for e-learning with regard to culture.

- The students in a multicultural class should be encouraged to be willing to understand each others culture and cultural differences. They should be made aware of different cultures around them.

- Teachers should also motivate themselves to understand the cultural differences that occur in a multicultural educational setting. The rapport established between a student and teacher is very important for a student's achievement (Joyce and Showers, 1988 cited in Paccione, 2000). This rapport with students of different races and cultures can be established by being culturally competent, by understanding different cultural systems, and building bridges across cultures to facilitate the instructional process.

Chapter 7 – Discussion and Conclusion

CHAPTER 7 – DISCUSSION AND CONCLUSION

7.1 Discussion - Teachers' and Learners' Perspective

In the previous chapters, the researcher looked at Teachers' and Learners' perspective of e-learning separately and also proposed recommendations to reduce the barriers associated with e-learning (as identified by Learners and Teachers). In this section of the Chapter, the researcher looks at both the perspectives together to recommend a common solution to better the e-learning instructional strategy. The two studies provided us with four common issues to tackle in e-learning which are described bellow (along with some recommendations).

1. From the learners' point of view, it was suggested that providing multimedia components to the students in the online courseware would increase learner satisfaction with the course. Therefore, teachers would need to include more audio, video, animation and multimedia features in their courseware to enhance the attractiveness of the online courseware and to motivate students.

   Now, if we look at the teachers' point of view, teachers are already overloaded and a major barrier to incorporate e-learning into their teaching is the amount of time and workload required in developing and managing online courses.

   Thus, students' expectations are not being able to meet, as the teachers are not able to provide them the interactive multimedia components in the course as they are already complaining for the amount of time and effort required to manage online courses.

   RECOMMENDATION: Students should definitely get what they want but at the same time teachers should be better supported institutionally to deliver the same. Teachers should be given technical, pedagogical and instructional support from the institution and more time to integrate technology into their courses. Institutional support can be in the form of more support staff at departmental or faculty level. This would mean a paradigm shift in staffing strategies. The institution would need to bring in more Learning Technologists, Instructional Designers and e-learning experts into the institution at departmental level to promote quality in teaching and learning.

2. From the learners' point of view, one of the major barriers to e-learning (as found from the Learner's Perspective) was found to be the lack of instant/timely feedback from teachers. To reduce this problem, teachers should respond immediately/timely and try to give prompt feedback.

Now, if we look at the teachers' point of view, teachers already perceive the development and management of online courses to be time-consuming and the immediacy required while responding to student queries creates a heavier workload on teachers.

Thus, students' expectations are not being able to meet as the teachers are already complaining for the amount of time and effort required to manage online courses.

RECOMMENDATION: Providing the teachers with some kind of expert systems (as explained in Chapter 4) can reduce the amount of time spent in answering queries. One way to understand expert system is to view the instructor's knowledge as an expert system and develop tools to capture and dispense the expert knowledge without depending solely on one-on-one contact with the instructor [So this can manage a lot of queries of the students]. One simple option is that the instructors can develop online FAQ lists similar to those used by technology companies. Adding a search function further enhances the value of this device. Developing a virtual assistant with artificial intelligence software is another approach that combines both a knowledgebase and search function with a natural language interface and graphics that will not only provide the information students require but engage them in a conversational way providing the illusion of a personal dynamic for answering questions about research and academic programs.

If such a system is based on behaviourist theory of learning, the system may respond immediately and give prompt feedback to students and if based on constructivist theory of learning, the expert system may not give the answer directly but may encourage student enquiry and collaboration rather than quick and immediate answer to a question that can itself be a barrier for effective constructivist student learning. Whatever the case may be, data suggests that the students will be better satisfied (as they would get an immediate response) and the

teachers' concern over the time required to provide immediate/timely feedback to students may reduce as they would no longer be the first point of contact.

3. From the learners' point of view, one of the major barriers to e-learning was found to be inadequate communication between staff and students. Most of the students preferred to clarify problems face to face rather than through e-mails or discussion forums. Also lack of body language, facial expressions and physical cues in communication through emails and discussion forums was identified as one of the barriers to e learning. They also found written communication to be time consuming.

Teachers had a similar view and they also preferred clarifying problems face-to-face rather than through e-mails or discussion forums.

Thus, students' as well as teachers' expectations are not being able to meet (in purely online courses), as they both seem to prefer classroom based face-to-face communication when it comes to clarifying problems or initiating complex human interactions.

RECOMMENDATION: A drastic shift from the traditional face-to-face learning to the other extreme of e-learning is not recommendable as the students are not yet ready for it. Each has their own advantages and drawbacks and it is not surprising to say that blended learning, which incorporates best of both the worlds, is the way forward. Blended Learning does not replace traditional classroom based learning rather it compliments and enhances face-to-face teaching. The use of e-learning tools/media as part of the blended learning strategy can help in reducing the communication-barrier. The introduction of a face-to-face alternative (along with the online media - email, conferencing, discussion forums, chats etc) for carrying out discussions and other communication purposes in blended approach can be seen as a significant part of the blended strategy to minimise the 'communication barrier'.

4. From the learners' perspective survey, it was noted that a majority of students did not find discussion forums to be useful to promote peer-to-peer discussions and knowledge construction. Also the level of participation in discussion boards was found to be minimal. Most of the students either disagreed (cycle 1) or were neutral (cycle 2 and 3) to the statements: Group work can be easily managed and organised

using online collaborative tools; Group discussions through discussion forums are convenient and helpful. Also students noted in the Nominal Groups that Forums worked on forced basis. This study did not show any evidence that students necessarily feel that they benefit from computer-based discussions.

From the teachers' perspective survey, it was noted that a majority of teachers (43%) identified e-learning to be advantageous to students in terms of constructing knowledge through collaboration and peer-to-peer discussion.

These results show that teachers want their students to collaborate and construct knowledge through peer-to-peer discussions (and they think e-learning can help them achieving this) but a majority of students do not find discussion forums to be useful. This study did not show any evidence that students necessarily feel that they benefit from computer-based discussions. This results in unsatisfied teachers and learners.

RECOMMENDATION: The online environment clearly has the capability to propagate the constructivist approach by encouraging learner controlled, critically reflected and deeper learning. This is only possible, if we make the environment more informal and give the students the choice to be anonymous (if they prefer it) and also by excluding the teachers from being active observers of the discussions. This would encourage participation from learners who may be silent just because of the awareness of the teacher's presence. Clearly there may be benefits in providing discussion forums on a course website to encourage critical reflection and discussion; but this medium should not be forced upon the students. The participation or non-participation in these forums should not be the basis to conclude deeper learning for active participants while surface (information gathering) learning for passive participants. It is important to recognise that students' inclination to interact can depend on a variety of factors, including personality and learning styles. By all means provide discussion boards/forums to facilitate and encourage student centred learning but as providers of education also be available for a more face-to-face interaction (when required depending upon subject and students). This would be possible only if the institution provides enough staff time and training (which includes technology, institutional e-learning strategies, strategies to address issues like culture etc) along with tools like an expert system (explained in Chapter 5).

It is important to note here, that the above discussion on the usage of discussion boards is based on the students' perspective of such forums on courses that are offered in a blended format. The usage of discussion boards in purely online courses or distance-learning courses could be much more than blended courses, as in such courses, online tools (like discussion boards, emails etc) are the primary and possibly the sole mechanism to communicate and collaborate. In blended courses they get a chance to communicate face to face with other students as well as teachers. Therefore the need to communicate, discuss, critically reflect or collaborate through the online medium decreases. Also the group (in the study) that was using the discussion forums was a small group of 30 (Diploma course on Health Informatics) and 10 (Masters and RTP course on Health Informatics). The usage and suitability of discussion forums for groups that are much larger (say for a class of 100 students) could be much more as face-to-face communication and collaboration in such classrooms could pose to be a challenging task.

7.2 Summary of Conclusions from Individual Studies

In relation to the **Teachers' Perspective of e-learning**, the following conclusions were made:

1. There was almost a 50 – 50 % divide between those who prefer to teach through traditional classroom based methods and those who prefer blended approach (i.e. a combination of classroom based teaching and online teaching). An overwhelming acceptance (48%) among respondents to 'blended teaching' have helped to conclude that classroom based learning has started to give way to blended learning. E-learning and classroom based learning have blended together rather than one ruling out the other.

2. Three major barriers to e-learning (as identified by Teachers) were found to be

   - *Lack of Institutional Support* [It was recommended to provide technical, pedagogical and instructional support from the institution. Institutional support can be in the form of more support staff at departmental or faculty level. This would mean a paradigm shift in staffing strategies. The institution would need to bring in more Learning Technologists, Instructional Designers and e-

learning experts into the institution at departmental level to promote quality in teaching and learning.]

- *Time Requirement* [It was recommended to provide the teachers with some kind of expert systems that can reduce the amount of time spent in answering queries.]
- *Communication Problem* [It was recommended to increase the interactivity of VLEs to combat the problem of lack of physical cues and body language in online teaching. Also, the introduction of a face-to-face alternative for carrying out discussions and other communication purposes in blended approach could be seen as a significant part of the blended strategy to minimise the 'communication barrier'.]

3. A relation between 'Perceived Problems' and 'age groups' was identified. Teachers of the age group of 50+ were in more agreement with problems of e-learning than the other age groups.

4. A relation between 'Perceived Problems' and 'teaching preferences' was identified. Teachers who generally preferred traditional classroom based teaching were in more agreement with problems of e-learning than the other groups who preferred purely online or a blended approach.

5. A relation between 'Perceived Problems' and 'online course delivery' was identified. Teachers who had not delivered any course online or offered any online support were in more agreement with problems of e-learning than the other group who had delivered any course online before.

6. Four major advantages of e-learning (as identified by Teachers) were found to be

- *Accessibility and Availability* - Easy access and availability of course materials to the students all the time.
- *Collaboration and Discussion* - Use of online collaborative and discussion tools (discussion forums, collaborative tools like Wiki) in learning
- *Blended Learning* - Use of ICT/e-learning tools as part of a blended learning environment

- *Advantageous to Learners* - as they have access to the online resources and learning materials at all times, and they can explore, investigate and research areas of knowledge according to personal preference and interest.

7. A relation between 'Perceived Advantages' and 'age groups' was identified. Teachers of the age group of 50+ were in more disagreement with the advantages of e-learning than the other age groups.

8. A relation between 'Perceived Advantages' and 'teaching preferences' was identified. Teachers who generally preferred traditional classroom based teaching were in more disagreement with the advantages of e-learning than the other groups who preferred purely online or a blended approach.

In relation to the **Learners' Perspective of e-learning**, the following conclusions were made:

1. Three major advantages of e-learning (as identified by Learners) were found to be:

- *Accessibility and Availability* - Easy access and availability of course materials (course documents, lectures, and other information) to them all the time.
- *Greater equality and participation from shy and passive learners*
- *Encourage Critical Reflection* - Asynchronous environment allows them to write carefully about ideas encouraging critical reflection

2. Two major barriers to e-learning (as identified by Learners) were found to be:

- *Communication Problem* – Most of the students preferred to clarify problems face to face rather than through e-mails or discussion forums. Also lack of body language, facial expressions and physical cues in communication through emails and discussion forums was identified as one of the barriers to e learning. They also found written communication to be time consuming. [It was recommended to increase the interactivity of VLEs by integrating more multimedia components (audio, video, animation etc) in the course. Also, the use of e-learning tools as part of the blended learning strategy can help in reducing the communication-barrier.]

- *Lack of instant/timely feedback* – Lack of timely feedback from teachers was found to be a major barrier to e-learning. [It was suggested to the teachers to prepare the students adequately for this online learning style, as it may not always be possible to provide an instant feedback, due to the asynchronous nature of online discussion. Also further possibilities of providing the students with an expert system was recommended]

3. Discussions forums were found to be useful to get information but not very useful to promote discussions.

4. A majority of students preferred getting a detailed step-by-step instruction (a behaviorist approach to learning) in online courses.

5. Comparing the three Learners' Perspective's action research cycles, it was observed that the learner's preference towards blended learning increased from 55% (in cycle 1) to 85% (in cycle 2) and 81% (in cycle 3). An overwhelming acceptance (55%, 85% and 81%) among respondents to 'blended learning' helped to conclude that classroom based learning has started to give way to blended learning.

6. The results show that computer literacy/proficiency (good skills in computer) contributes towards the perception of less problems associated with e-learning.

7. Students preferred demonstrations by the lecturer to online animated demonstrations. Though, animated demonstrations were preferred over text based online instructions or information.

8. Giving the students more flexibility in access of materials, more multimedia instructions (audio, video, animations), more structured environment (in terms of predictability i.e. ability to see the whole course layout/lecture notes etc), building in more interactivity, including demonstrations by the lecturer (along with online instructions – i.e. making it more blended) and giving them more detailed step-by-step instructions made the students prefer blended mode of learning over traditional classroom based learning.

In relation to the **Cultural Issues in e-learning**, the following conclusions were made:

1. Cultural differences associated with teaching and learning in a multicultural classroom were identified.

2. It was suggested for the Course developers or the online system designers to be trained to understand the inter-cultural design issues for developing a system that is to be used internationally as well as locally.

3. There should be an awareness of cultural issues that may arise in an e-Learning environment.

4. Cultural issues should be borne in mind while transferring e-learning know how to another culture.

5. E-Learning in its present state may not be the perfect solution to remove the cultural differences from the educational system but it may help in minimising some of the cultural misunderstandings and a more blended approach (a combination of technology-based materials and face-to-face sessions) may help in accommodating a variety of different learning styles of students with different cultural backgrounds.

6. The students in a multicultural class should be encouraged to be willing to understand each other's culture and cultural differences. They should be made aware of different cultures around them.

7. Teachers should also motivate themselves to understand the cultural differences that occur in a multicultural educational setting.

8. Three major advantages of integrating E-learning into a multi-cultural educational setting has been identified as:

   - *Flexibility of choosing language of instruction.*
   - *A risk free environment* - where the students (shy, passive, insecure and verbally challenged) can try new things and make mistakes without exposing themselves.
   - *Availability of extra time* - The asynchronous nature of e-learning allows students to take their time in responding to teachers' queries and

discussions, whereas in classroom contexts often the conversation moves on before they can understand the question or the discussion.

7.3 General Conclusion

From the Learners' Perspective survey, it was identified that a majority of students (in all the 3 cycles) were neutral to the statement (40%) – "I like the fact that e-learning gives me more control and flexibility over my learning with minimal lecturer input". Some students still preferred behaviourist approach to learning (direct instructions) as they were more familiar to direct instructional approach. Some of them requested for more step-by step instructions for their assignments while some were happy to explore the topic further on their own. From the teachers' perspective survey, it was noted that a majority of teachers (43%) identified e-learning to be advantageous to students in terms of constructing knowledge through collaboration and peer-to-peer discussion. At the same time, they were neutral (63%) to the statement that online tools can help the students become more versatile learners with individual learning styles and needs.

With the advent of e-learning, its true that teachers have got the means of delivering student centred learning and the literature also suggests that making the shift from teacher-led approach (Behaviorist) to student-centered approach (Constructivist) would narrow the gap in expectations and outcomes of e-learning. But the findings of this research suggest that the students as well as teachers are both in the early transformational stage of this shift. Both the students and teachers are in a dilemma; a dilemma to choose between student autonomy and student dependence; between teachers' authority and teachers' discretion and between Learning environment's structure and freedom. Placing a greater value on teachers as the knowledge expert and on objectivism of knowledge (Behaviourism) or placing a greater value on learners as independent and constructive learners' (Constructivism) creates a bias in either direction and results in unsatisfied learners and teachers.

To conclude, the researcher would like to sum up the discussion with this diagram.

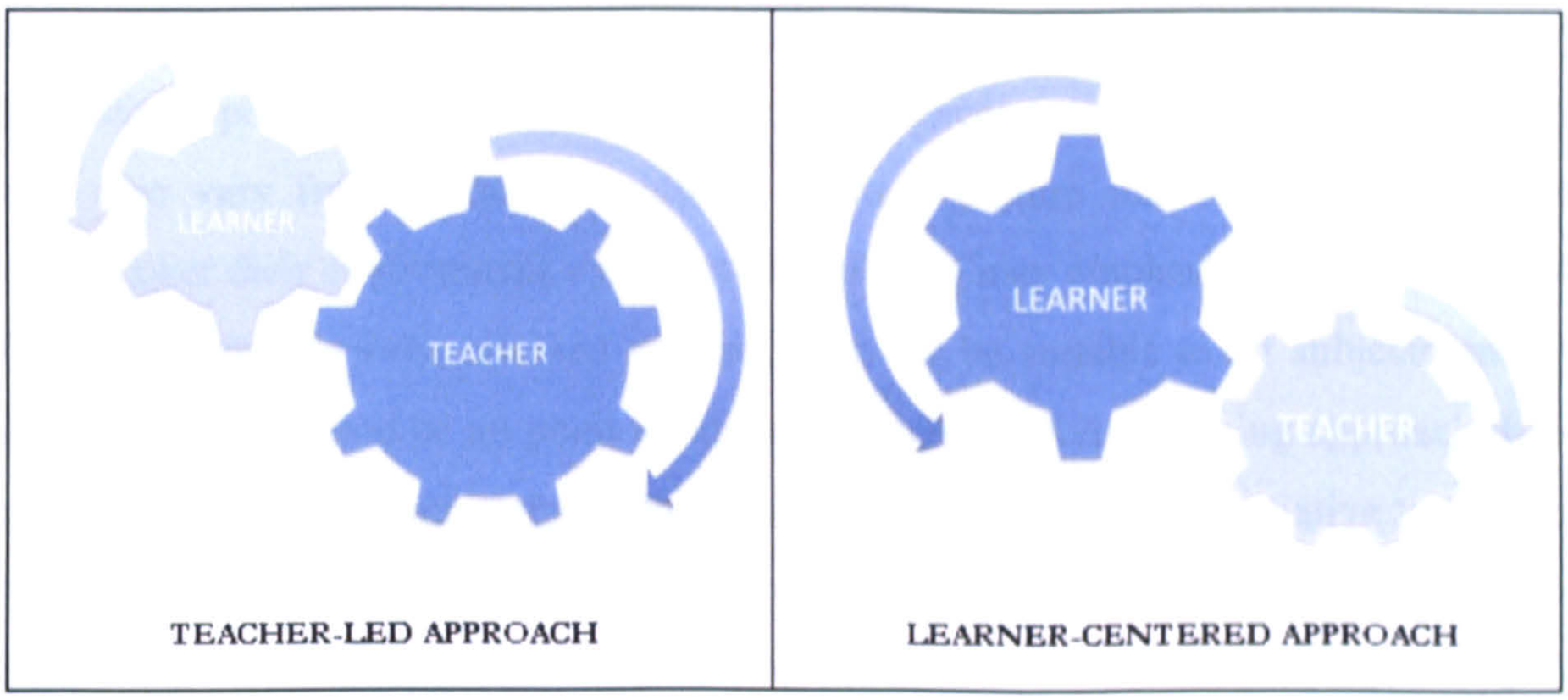

Figure 52 - Conclusion (Teacher-Led to Learner-Centred)

A decade back we were at an age where we had a didactic form of teaching where the teacher was in control of the complete learning process and even though there were arguments favouring student centred learning the means of managing and delivering such approaches were difficult. With the advent of e-learning, educators got the means of delivering student centred learning. Initially it was assumed that uploading the lectures and providing a forum for communication is sufficient and that learning will happen but it did not work; then the educators thought that the teachers have to do more than that and hence models like Salmon's 5 stage model came into being. But that is not working either because what they missed is the amount of pressure it is putting on the teachers in addition to their endless responsibilities. The literature suggested that making the shift from teacher-led approach (Behaviourist) to student-centered approach (Constructivist) would narrow the gap in expectations and outcomes of e-learning.

This research investigated the teachers and learners' experiences with e-learning (as they are equal stakeholders in the overall development, implementation and evaluation of e-learning) and found that the online environment clearly has the capability to propagate the constructivist approach by encouraging learner controlled, critically reflected and deeper learning. But at the same time, many students still prefer behaviourist approach to learning (direct instructions) as they are more familiar to direct instructional approach and these students need new skills (and more time) to be confident in seeking out information and finding answers/solutions to their problems by taking responsibility of their learning and by reflecting upon their learning. E-learning opportunities and transnational delivery of education has led to culturally

diverse student body whose attitude, style of learning and thinking may vary depending upon their cultural background. Preferences for the level of learner control may also vary from culture to culture. Western culture may emphasise learners' control over their environment while eastern cultures may emphasise teachers' control. Therefore, constructivist oriented systems may not be suitable to all subjects and all students. There would be no point in adopting a constructivist learning approach if the students do not feel comfortable with autonomy or do not take the initiative to learn or prefer a more directed and monitored approach. Similarly, there would be no point in continuing with a behaviourist learning approach if the students are such that they do not need to be told what to do, they are self-motivated and do feel comfortable with autonomy or a more self-directed approach. Whatever the case may be, there would always be some principles of each learning theory that would be useful in all learning situations like reinforcement (in Behaviourism) and learning from one another (in Social Constructivism). Therefore, the instructional design of courses should be such that it is based on a combination of behavioral and constructivist approach. We are still in a mid way between teacher-centred (Behaviourist) approach and student-centred (constructivist) approach. Placing a greater value on teachers as the knowledge expert and on objectivism of knowledge (Behaviourism) or placing a greater value on learners as independent and constructive learners' (Constructivism) creates a bias in either direction.

Based on the research findings and within the limitations of this study, it can be concluded that it is important to tip the balance equally between teachers and students to create a more teacher-learner balanced approach rather than student-centred or teacher-led approach. By all means provide the necessary tools to facilitate and encourage student centred learning but as providers of education also be available for a more step-by-step guide (when required depending upon subject and students) to provide a more structured environment. This would be possible only if the institution provides enough staff time and training (which includes technology, institutional e-learning strategies, strategies to address issues like culture etc) along with tools like the expert system (explained in Chapter 5). Such a scenario, would tip the balance equally between learners and teachers and that's why the researcher coins it as **'teacher - learner balanced approach'** as shown in **Figure 53.**

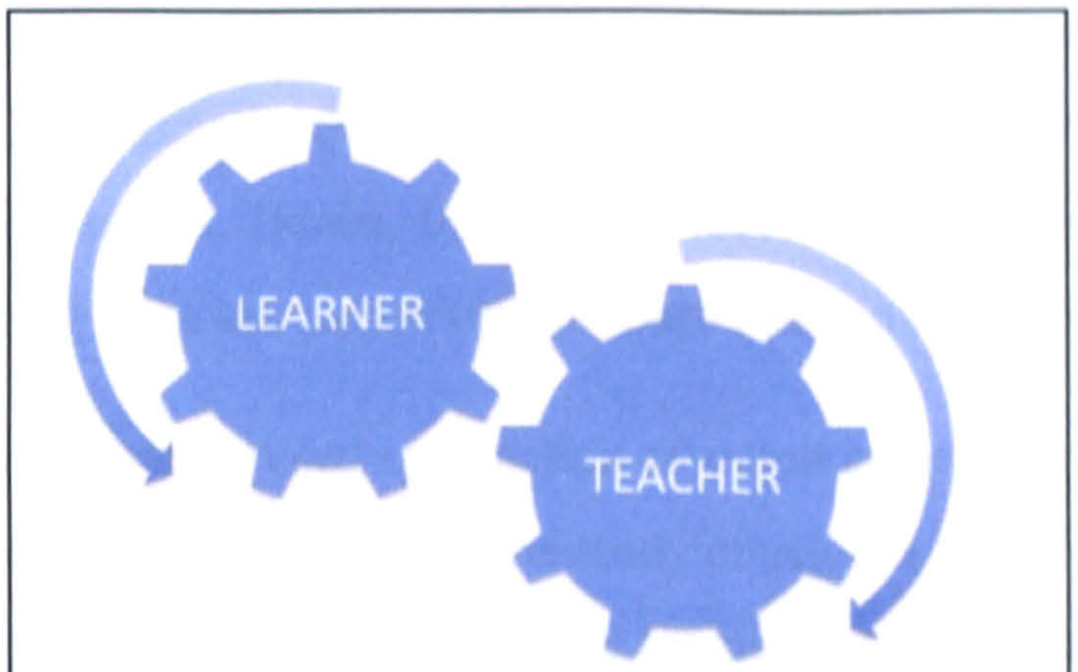

Figure 53 - Conclusion (Teacher-Learner Balanced Approach)

The researcher would like to state in the end, that the recommendations described in this study are only a few possible methods of bringing the change in our teaching and learning practices in e-learning/ blended learning as the researcher believes in what Laurillard (2002) stated: *"Higher education cannot change easily. Traditions, values, infrastructure all create the conditions for a natural inertia"(p. 3).*

7.4 Study Limitations

A few limitations of the research are stated below:

1. In the Learners' Perspective cycle, the two courses under study had 12-week course duration. Had it been a longer duration course, the students would have got more time to build interpersonal relationships which could have led to knowledge sharing and construction through peer-to-peer discussions and collaboration. Wilson and Whitlock (1998) noted in their research study that the majority of students did not collaborate online with other students or become involved in extra work that was available to them because they said it was too time consuming. With respect to constructing interpersonal relationships with peers, short time duration, such as the 12-week course duration in the present study, may be a limiting factor in the development of interpersonal relationships.

2. A possible limitation of this study was the subject of the course in the Learners' perspective study. Even though ICT skills are seen as useful, they are often not seen as essential by dental students. Hence, the interest level in the course may have been limited and could have been the reason for non-participation in discussion threads.

3. Learners' Perspective was based on 3 action-research cycles carried out on courses that were delivered in a blended format. The study concludes that blended learning has a more significant growth area than fully online learning or traditional classroom based learning. The researcher feels that a parallel action research study carried out on courses delivered purely online and courses delivered purely in a traditional classroom format would have given a more realistic view and a better way to compare the three modes of teaching and learning. Since the courses were delivered in a blended format, there could have been a bias in the responses in favour of blended courses. The reason for selecting these courses was partly because the researcher had access to these courses, as it is important in an action research model to implement the recommendations suggested in each cycle to be able to see the change and evaluate it in the next cycle.

4. Non-participation in discussion forums could also have been due to the blended nature of the course. The usage of discussion boards in purely online courses or distance-learning courses could be much more than blended courses, as in such courses, there is no other option other than the online modes (like discussion boards, emails etc) to communicate and collaborate. In blended courses they get a chance to communicate face to face with other students as well as teachers. Therefore the need to communicate, discuss, critically reflect or collaborate through the online medium decreases.

Another possible reason for low participation in Discussion boards could be the size of the class. The group (in the study) that was using the discussion forums was a small group of 30 (Diploma course on Health Informatics) and 10 (Masters and RTP course on Health Informatics). The usage and suitability of discussion forums for groups that are much larger (say for a class of 100 students) could be much more as face-to-face (or one-to-one) communication and collaboration in such classrooms may pose to be a challenging task. For larger groups the online medium (discussion boards/forums) could be the ideal way to interact, communicate and collaborate. Therefore, had the

researcher been evaluating a course with 100 students enrolled in it; the situation would have been different.

7.5 Future Work

Lack of 'Instant Feedback' was found to be one of the major factors to dislike online mode of learning. A need for 'instant feedback mechanism' has been identified through this research. Instant feedback in online courses can be generated through artificial Intelligence. A review of artificial Intelligence systems, NLP (Natural Language Processing) Systems and other similar systems can be considered as a 'future work' which can provide 'instant feedback' to a student's query from a knowledge base or based on a more constructivist theory could encourage student enquiry and collaboration instead of providing an immediate answer.

The study noted that the learners did not find discussion forums useful to promote discussion and collaboration. The usage of discussion boards in purely online courses or distance-learning courses could be much more than blended courses and a further investigation into it would lead to more concrete reasons as to why some students do not contribute to these discussions (specially in blended courses). Also a further investigation to see if it is really necessary for the learners to participate in online discussions in order to feel a sense of community and encourage deeper learning by discussion and reflection could be a possible future work (in relation to this research).

Apart from providing answers to the research questions, the 'cultural part' of the research also identified some important questions that need to be addressed before attempting to design an online/blended course for students from different cultural backgrounds (given below). The answers to these questions are out of the scope of this research but may be considered as a way forward for future work. These questions are given below:

1. Most of the VLE's (Virtual Learning environments) are developed by individualistic countries. Does it bring a bias in the system (if it is to be used by people from a collectivist culture)?

2. Do the students perform better on the interfaces and environments (VLE's) designed specifically for their culture?
3. Online systems shift the locus of control towards student centered learning with the students initiating their own task. Will this be welcomed by the collectivist culture (teacher-centered)?
4. How should the students of individualistic culture be motivated for group work?
5. Should we develop different web interfaces for different cultural groups? Does it further increase the gap?
6. Should we look at similarities between cultures rather than differences to reduce the 'cultural barriers' in educational setting?

The 'cultural' part of the study has shown some evidence of e-learning as a possible solution to some of the problems in a multicultural classroom but it is limited in terms of size, diversity and scope. In order to further explore the potential benefits of e-learning in a multicultural environment, the study needs to be extended with a larger and diverse sample size.

Chapter 8 – References

CHAPTER 8 – REFERENCES

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Chapter 9 – Appendices

CHAPTER 9 – APPENDICES

Appendix A – Teacher's Perspective Questionnaire

Please see attached CD

[FOLDER – Teachers' Perspective]

[FILE NAME - TP Questionnaire]

Appendix B - Teachers' Perspective - Thematic Analysis 1

Please see attached CD

[FOLDER – Teachers' Perspective]

[FILE NAME – TP Thematic Analysis 1]

Appendix C - Teachers' Perspective - Thematic Analysis 2

Please see attached CD

[FOLDER – Teachers' Perspective]

[FILE NAME - TP Thematic Analysis 2]

Appendix D – Learners' Perspective Questionnaire – Cycle 1

Please see attached CD

[FOLDER – Learners' Perspective]

[FILE NAME - LP Questionnaire Cycle 1]

Appendix E – Learners' Perspective Questionnaire – Cycle 2

Please see attached CD

[FOLDER – Learners' Perspective]

[FILE NAME - LP Questionnaire Cycle 2]

Appendix F – Learners' Perspective Questionnaire – Cycle 3

Please see attached CD

[FOLDER – Learners' Perspective]

[FILE NAME - LP Questionnaire Cycle 3]

Appendix G – Culture Questionnaire

Please see attached CD

[FOLDER – Cultural Issues]

[FILE NAME – CP Questionnaire]

Appendix H – Cross Border (Transcript of Interview with Dr. Sewilam)

Please see attached CD

[FOLDER – Cultural Issues]

[FILE NAME – Cross border Interview]