Chapter Two:

LITERATURE IN CONTEXT

2.1 Introduction

Whilst Chapter 1 presented the background to the study and the proposed research design, this chapter considers the relevant literature within the context of the study. The literature focuses on issues of effective teaching and learning, problems relating to effective teaching and learning, the online environment and problems relating to this environment. At the end of the chapter, the shortcomings in the literature, as well as the lack of research, will be discussed and finally a conceptual model is presented to frame this study.

Many educators entered the 21st century with the traditional teaching methods still firmly entrenched. However, the times, as well as the students, have changed. They have started adapting to the future in ways that go beyond the digital immigrant's imagination:

"…new systems for communicating (instant messaging), sharing (blogs), buying and selling (eBay), exchanging (peer-to-peer technology), creating (Flash), meeting (3D worlds), collecting (downloads), coordinating (wikis), evaluating (reputation systems), searching (Google), analyzing (SETI), reporting (camera phones), programming (modding), socializing (chat rooms), and even learning (Web surfing)" (Prensky, 2005/2006, p.9).

Lecturers cannot continue to use the age-old tried and tested methods of lecturing (e.g. chalk-and-talk) and expect students to be satisfied and to succeed. New methods of effective teaching and learning, which meet the expectation of the diverse student body and which engage students, should be explored and implemented. "Because common sense tells us that we will never have enough truly great teachers to engage these students in the old ways—through compelling lectures from those

rare, charismatic teachers, for example—we must engage them in the 21st century way: electronically" (Prensky, 2005/2006, p. 10).

However, and this is the nub: class sizes are increasing, classes are diversified in terms of ability, cultural background, etc., universities face stringent budget constraints, lecturers are under severe pressure to increase their research outputs and as a result of this, changing teaching methods is just not a priority for many in the Higher Education field (Bartlett, 2003). The problem seems to fit the saying: "You do not have time to sharpen the blade, so you chop with a blunt axe."

This research considers the use of e-learning and specifically a Learning Management System available to lecturers involved in addressing the digital native's needs and evaluates the different tools from the perspective of students.

The focus of this research covers four main areas, namely:

- Higher education
- Good and effective teaching and learning
- Large classes
- Electronic learning

The literature consulted had therefore to cover a wide spectrum of issues. Many of these were overlapping and boundaries were not always clear. Initially, key concepts such as 'Higher Education', 'Learning Theories', and 'Electronic Learning' were used. However, this soon proved futile, since the number of hits were far in excess of a million and the majority of these were irrelevant to the topic. The search was then refined and keywords and concepts used either alone or in combinations, were:

Higher Education
Large Classes
Teaching/learning strategies and theories
Constructivism
Behaviourism
Social Constructivism
E-learning/Elearning/Electronic learning
Hybrid learning and teaching /Mixed modal
Economics teaching

Searches were conducted through ERIC, Google and EBSCO.

Journals on Higher Education, Economics Education and Learning with Technology were also consulted and articles which supported the keywords were included for perusal.

2.2 Teaching and learning within the HE environment

The Human Sciences Research Council (HSRC) defines Higher Education as follows:

"A level of educational provision defined by the National Qualifications Framework (NQF) in South Africa as including all qualifications from Level 5 to Level 8 on the NQF. Defined differently, higher education includes all education programmes at the post-school, pre-degree level, including certificates, diplomas and higher diplomas (Level 5 programmes), as well as all undergraduate degree and post-graduate degree programmes, from bachelors degrees to the doctoral level (Levels 6-8 programmes)" (HSRC, 2005. online).

"The purpose of Higher Education is to change people, or more precisely, for them to change themselves" (Bligh, 1990, p. 108). Bligh furthermore identifies five purposes for higher education, namely:

1 To develop attitudes and emotional adjustment,
2 To provide a base of adaptable occupational skills,
3 To promote the general powers of the mind,
4 To develop culture and standards of citizenship,
5 To advance learning (Bligh, 1990, p. 10).

In order to be effective, teaching or learning strategies should aim to address these five purposes. To do this, one should understand what is meant by effective teaching and learning and the symbiosis between these two concepts needs to be examined.

2.2.1 Teaching (Or lecturing?)

"Higher Education is an agent of change" (Bligh, 1990, p. 10). The teacher or lecturer needs to be the change agent and this change happens when "Teaching is orchestrated by one person to enable another person to do or comprehend something" (Pearsall and Trumble, 1996, p.1479).

The word 'teaching' is often used as a synonym for lecturing within the higher education environment, but when reading different definitions of lecturing, it becomes clear that teaching is a much wider concept than lecturing. In its basic form, lecturing may be defined as follows:

"Middle English, act of reading, from Late Latin lectura, from Latin lectus, past participle of legere, a discourse given before an audience or class especially for instruction" (Naber and Köhle, 2002, online).

This definition refers to the actual lecturing activity involved, and is also echoed in the work of Brown and Race (2002, p. 17), where they refer to lecturing as the classroom situation where "…someone (is) talking; a lot of people (are) listening". In the same sense, Sloman and Cambell (2002, online) state that lecturing is "…the delivery of a course through a series of presentations by academic staff members to a group of students, usually with visual prompts and aids. The term 'lecture' can encompass a range of styles, approaches and formats… Some of these involve considerable student participation. Traditionally, however, lectures have involved the one-way transmission of course content from academics to students." Race (2001, p.105) maintains that "…lecturing is the most public side of the work of most higher education lecturers", implying that it is merely one part of the life of a lecturer.

Teaching is more than a mere one-way knowledge transfer; it is knowledge advancement. Laurillard defines the aim of university teaching as that which "…makes student learning possible" (1993, p. 28). Steinberg (1991, p. 102) speaks about the Socratic dialogue as a teaching technique used by Socrates:

> …ask questions, probe the answers and allow students to learn more about themselves by doing this. (See also Blight, 1990, p. 23).

2.2.2 Learning:

Different domains of learning have been identified: predominantly Cognitive learning (Bloom, 1956), Affective learning (Krathwohl, Bloom, and Bertram, 1973) and Psychomotor learning (Harrow, 1972). This is often referred to as KSA: Knowledge, Skills, and Attitude (Clark 1999, online).

Cognitive Domain

The cognitive domain refers to knowledge and intellectual facts. Within this domain, there are six major categories, which can be thought of as degrees of difficulties. Therefore they must be mastered sequential order. These categories are listed below with a very brief keyword relating to each one (Bloom, 1956).

Knowledge: Data or information recall
Comprehension: Understanding,
Application: Applies that which was learned in the classroom to new situations.
Analysis: Break up concepts into parts to understand the whole.
Synthesis: Put parts together to form a whole to create new meaning
Evaluation: Make judgments

Affective Domain

This domain refers to the role which emotions play in learning, such as values, appreciation, motivation, and attitude. Five major categories are identified and listed below and are described in terms of increasing levels of complexity regarding attitudes and emotional responses (Meyer, 2005, p.33). They are:

Receiving or attending: Creates awareness
Responding: student's motivation to learn
Valuing: accepting a value and committing to it
Organising: the development of a value system
Characterisation/Internalisation: person's behaviour consistently reflects the values that s/he has organised into some kind of system

Psychomotor Domain

This domain is characterised by motor skills, and for the purposes of this thesis, refers to technical or computer usage skills.

- **Involuntary/Reflex movement** – automatic reactions without learning
- **Basic Fundamental movements** – inherent basic movement patterns
- **Perceptual** - response to/interpretation of various stimuli
- **Physical abilities/activities** - stamina that must be developed for further development
- **Skilled movements** - advanced learned movements
- **Non-discursive communication** - effective body language/bodily movements

Learning is never only cognitive or psychomotor in nature, but is linked to affective behaviour (Meyer, 2005, p.32).

The three domains of learning mentioned above find expression in the work of Ramsden (1992, p. 26), who classifies learning into five categories:

1 Learning as a quantitative increase in knowledge
2 Learning as memorising
3 Learning as acquiring facts, skills and methods that can be retained and used as necessary
4 Learning as making sense or abstracting meaning
5 Learning as interpreting and understanding reality in a different way

Several models of learning exist to explain how learning takes place. The approaches are either from the teacher's perspective or from the learner's point of view (Ask and Haugen, 2005). Most approaches may be classified in one of three categories:

- Instructional: The Behaviourist school views learning as a continuous process of stimulus, response and reward, i.e. changing behaviour (Race, 2001, p.2). This teacher-centred approach allows the teacher to choose material, determine the pace of delivery and observe the students' progress, whilst students are passive (Ask, Bjørk and Heck, 2003).

- Constructivist: The Constructivist learning perspective originated in the 1970s and finds it origins primarily in the works of Bruner (1985), Piaget (1952), Vygotsky (1978) and Papert (1980). Its fundamentals lie within the cognitive learning psychology (Jonassen, Peck and Wilson, 1999; Oliver, 2000), which

focuses on perception, memory and people's development of their own interpretation and understanding of learning by demonstrating it through problem- solving (Race, 2001, p2). Vygotsky and Piaget's theories support the notion that learners should be active in the learning process, rather than passive bystanders who merely receive given knowledge (Laurillard, 1993, p.15).

- Social Constructivist/Social-cultural: The Transformatory approach integrates the learner, the group, the social context in which the learning takes place and the action learning process (Askew and Carnell, 1998, p. 8, Ask and Haugen, 2005, WCCE). Unlike the first two approaches discussed, which stress behavioural and cognitive aspects of learning, this approach to learning also includes emotional and social aspects. "Constructivist teaching usually searches for the current cognitive framework of the learner on which to build, and contextualising is part of that" (Robson and Hide, 2002, AusWeb2002).

Whereas teaching is seen as a vehicle for learning, it does not necessarily result in learning. Many other factors are also involved, not least of which is a teacher (Robson and Hide, 2002, AusWeb2002).

From the literature, it becomes apparent that teaching and learning are not mutually exclusive; the one happens in synchronisation with the other. The question that now arises is the following:

What are the essential components necessary in teaching that lead to effective learning?

What is currently considered to constitute successful teaching and learning? (Or alternatively – is teaching and learning the same thing?)

There is no single, most effective way of teaching. What is important is how the approach chosen affects the students' learning (Race, 2001, p.1, Prensy 2005/2006). The changing nature of current students, economic pressures and the use of different media forces one to change one's definition of what constitutes effective learning and teaching. In the past, students were regarded as "blank slates" and the instructor merely had to fill these slates with information. Students now create knowledge and

meaning, thought collaborative and interactive measures. Traditional methods of teaching are not able to measure up to expectations any more (Pallof and Pratt, 2001, p.3). A "real" teacher will include "…extensive and intensive interaction between faculty and student, a focus on individualizing instruction, a commitment to providing a broad knowledge base, and a critical perspective on the subject matter" (Lairson, 1999, p. 187).

According to Chickering and Ehrmann (1996, online), the American Association of Higher Education's "Seven principles for good practice in undergraduate education" include, as the first two principles, the following:

1. Encourages contact between students and faculty and
2. Develops reciprocity and cooperation among students.

Central to successful teaching is communication and interaction which should be included in any effective teaching strategy.

However, Colander (2004, online) warns against being overly naïve and ambitious when defining successful teaching. "Ultimately content, not delivery, determines whether one is or is not a good teacher. No matter how well you deliver it, if you do not have something to say, you are not going to be a good teacher." He goes further to compare the so-called "old methods" of teaching with the "new methods", but cautions that a great deal of common sense is a vital ingredient of good teaching and that not all that is new is necessarily good. This is summarised in table 3 below.

	Old paradigm	**Common sense approach**	**New paradigm**
Knowledge	Transferred from faculty to students	Faculty leads student into a previously constructed knowledge, while pointing out that it is not necessarily truth; emphasises critical thinking	Jointly constructed by students and faculty
Students	Passive vessel to be filled by faculty's knowledge	Active vessel to be filled by faculty's knowledge, but still a	Active constructor, discoverer, transformer of knowledge

		vessel to be filled	
Mode of learning	Memorising	A combination of learning terminology and relating	Relating
Faculty purpose	Classify and sort students	Develop students' competencies and talents; inspire, force, connive ways to get them to learn	Develop students' competencies and talents
Student goals	Students strive to complete requirements, achieve certification	Students strive to complete requirements and achieve within a discipline, certification and maybe become interested in broader learning	Students strive to focus on continual lifelong learning within a broader system
Relationships	Impersonal relationship among students and between faculty and students	Respect by student for faculty; personal relationship among students and between faculty and students within confines of the class	Personal transactions among students and between faculty and students
Context	Competitive/individualist	Combination of cooperation and competition	Cooperative learning in classroom and cooperative teams among faculty
Climate	Conformity/cultural uniformity	Sufficient conformity to make the class work	Diversity and personal esteem/ cultural diversity and commonality
Power	Faculty holds and exercises power, authority and control	Faculty has the authority and power, but uses it with restraint and understanding	Students are empowered; power is shared among students and between students and faculty
Assessment	Norm-referenced (i.e. graded 'on the curve') Typically multiple-choice items; students' rating of	Norm-referenced grades, with clearly defined requirements; teaching environment	Criterion-referenced; typically, performances and portfolios; continual assessment

	instruction at end of course	determines the type of exam used	of instructions
Ways of knowing	Logico-scientific	Uses the logico-scientific narrative, with acknowledgement of its limitations	Narrative
Epistemology	Reductionist; facts and memorisation	Abductive; combination of inductive and deductive	Constructivist; inquiry and intervention
Technology use	Drill and practice; textbook substitute; chalk- and-talk substitute	Class size and available technology determine the use of technology	Problem-solving, communication, collaboration, information access, expression
Teaching	Any expert can teach assumption	Content comes first; teaching comes second. An expert who cares can convey that to students	Teaching is complex and requires considerable training

Table 3: Colander's common sense approach to teaching

(Adapted from Colander 2004, online)

Colander further maintains that a good mixture of the old and the new may lead to teaching that is more effective. Hence, teaching strategies cannot be a one-fits-all approach, but must be developed within the context of the subject matter.

Successful teaching is therefore not merely constructivist or merely behaviourist, but an eclectic mixture of different methods, depending on factors such as the subject matter, the content, the composition of the students, etc. For example, Lairson's (1999, p. 187) reference to "individualized instruction" becomes virtually impossible when large groups of students are assigned to a single lecturer who struggles to get to know a handful of the group. In some subjects, such as Economics, the use of a constructivist epistemology is not feasible at all times; certain facts have to be taught and memorised before they can be understood or applied
(Colander 2004, online). The primary role of the teacher/lecturer is thus to decide on the ideal mix of "old" and "new" methods and then to provide guidance; learning should take place within this framework.

Biggs (2003, p. 5) is more specific with his definition of good teaching as "… getting most students to use the higher cognitive level processes that the more academic students use spontaneously." He compares the more academic student with the less academic student by means of a graph (adapted, 2003, p. 4), where levels of engagement are plotted against levels of student activity in Figure 1.

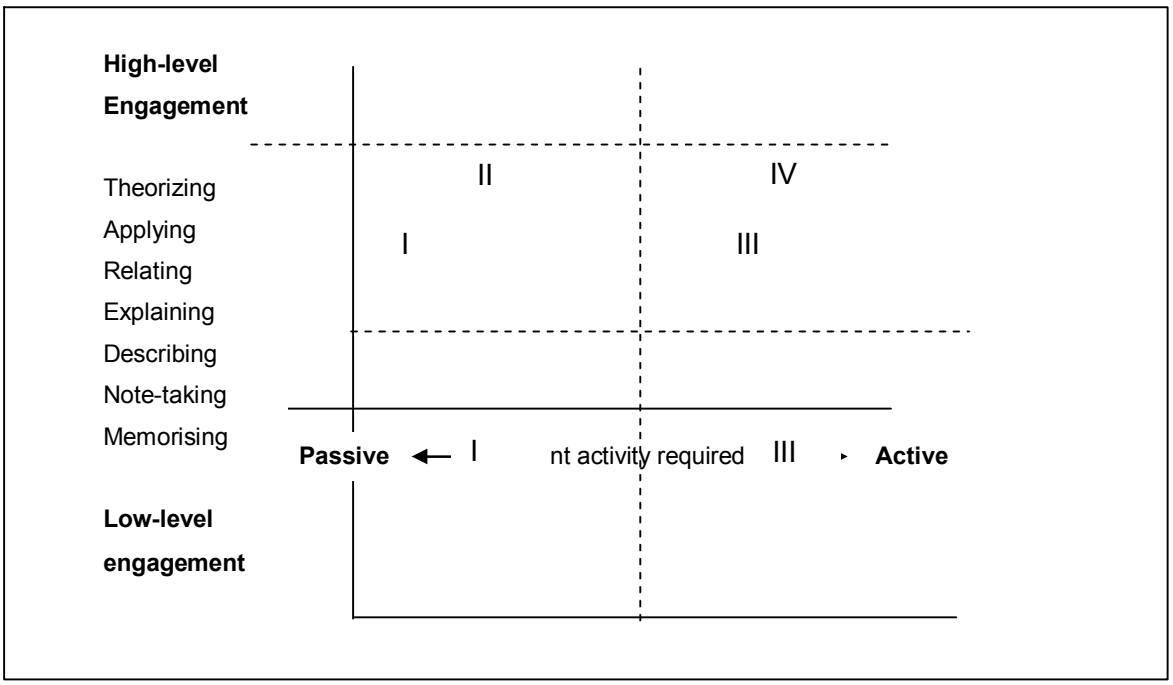

Figure 1: Levels of student engagement and student activity.

"Effective learning does not happen in a content vacuum" (Anderson, 2004, online). Learning has to take place within a specific context for it to have meaning. Academic learning may be seen as "…a series of activities that promote acquisition of high-level knowledge" (Nunes and Fowell, 1996, online). "However … the acquisition …is futile if the learner lacks the understanding needed to apply them in appropriate settings" (McPherson and Nunes, 2004, p. 2). Learning therefore, is the action of attaining new skills which the learner may make use of.

The most undesirable of situations is for students to fall within the first quadrant, where students are subjected to the standard lecture and are expected to write down and memorise. The ideal situation is in the fourth quadrant. Students participate

actively, communicate and are able to apply learning to real-world situations. Thus, the role of good teaching is to narrow the gap between the students in different quadrants.

Ultimately, the basic purpose of teaching or lecturing is to get the student to learn. Bligh (1990, p.102) quite rightly states that "a student's job is to learn" which "is something that students do, not something that is done to students" (Johnson, Johnson and Holubec, 1994, p.4).

Race identifies five factors underpinning successful learning (2001, p. 9). Table 4 summarises these factors, whilst combining them with elements of teaching (as identified in the literature), which need to be present in order for learning to be successful.

Factor (Race)	**Key issues**	**Teaching strategy must include:**
Wanting	Motivation, interest, enthusiasm	Enthusiasm, knowledge of subject matter
Needing	Necessity, survival, saving face	Applicability of content
Doing	Practice, trial and error	Active learning
Feedback	Other people's reaction, seeing the results	Interaction
Digesting	Making sense of what has been learnt, realising, gaining ownership.	Constructivism

Table 4: Successful learning and elements of teaching

(Table adapted from Race, 2001, p.9)

However, students' approaches to learning will differ, just as their experiences of learning will differ (Askew and Carnell, 1998, p. 35). This is instrumental when deciding on a teaching strategy.

In essence, teaching and learning cannot be separated when looking for success factors. The CHE (2003, p.7) maintains that teaching is not an end in itself, but "exists to bring about learning"; hence, "…one tends to teach (implicitly or explicitly) according to how one thinks learning happens." Ramsden (1992, p.102) links good teaching with effective learning. "The best way to improve teaching is to inquire into

the effects of one's teaching on student learning … Good teaching is open to change; it involves constantly trying to find out what the effects of instruction are on learning, and modifying that instruction in the light of evidence collected." However, one concurrent theme throughout the research is clear - when students are actively involved, rather than passive listeners, more effective learning takes place (Webb, Jones, Barker and Schaik, 2004, p. 93).

2.2.3 Active learning

Chickering and Ehrman's (1996, online) third principle of good practice in undergraduate education states that "…good instructional practice encourages active learning". In contrast to passive learning pedagogies such as lectures, in active learning the student has to be actively engaged in the learning process. 'Active learning' is a fairly broad concept and this might include in-class exercises, writing assignments, discussions or case-studies (Marburger, 2005, online).

2.2.4 Interaction

Neo (2005, online) refers to the importance of interaction within the learning and teaching process when he states the following: "Modern education theory is moving beyond the recall of facts, principles, or correct procedures and into the areas of creativity, problem-solving, analysis or evaluation (the very skills needed in the workplace in a knowledge-based economy, not to mention in life in general). Learners need the opportunity to communicate with one another, as well as with their teachers. This of course includes the opportunity to question, challenge and discuss issues. Learning is as much a social as an individual activity."

Interaction within the CIE-field is a "complex and multifaceted phenomenon" (Muirhead and Juwah, 2004 p. 12). Interaction refers to a dialogue or discourse or event between two or more participants and objects which occurs synchronously and/or asynchronously …" (ibid.). which involves at least two parties or objects, whilst interactivity allows for a two-way flow of information. In 1916, John Dewey referred to interaction as the "…defining component of the educational process". Laurillard (1997) also emphasises the essential role of interaction in education, whilst Vygotsky's (1978) popular concepts of social cognition imply that students can and should cooperate with one another. (Also see Schweizer, Paechter and Weidenmann, 2003).

Even though interaction is seen as a critical component of the education process, Anderson (2002, online) finds it difficult to define a clear and precise definition of interaction in education literature. Wagner's (1994, p.8) definition states that interaction needs action and two objects to be present. "Interactions occur when these objects and events mutually influence one another."

Bates (1991) identifies two types of interaction: Private interaction between the learner and the learning material, and Social interaction between the learner and tutor/facilitator and other learners. Moore (1989, online) subdivides social interaction into two further subgroups, therefore classifying it into three distinctive types:

- Student /content (or learner/content)
- Student/ teacher (or learner/instructor)
- Student/student (or learner/learner)

This list was expanded by Anderson and Garrison (1998, as quoted in Anderson, 2002, online) to include teacher-teacher, teacher-content and content-content interaction.

According to Anderson (2002, online), students who interact will have a deeper understanding of the content, and surface learning which is often found at undergraduate level, will be replaced by deeper learning. Anderson and Garrison's channels of interaction between the different participants in the learning process are illustrated as follows in Figure 2. According to this illustration, learning that goes beyond superficial rote learning and memorising, needs some kind of interaction to take place.

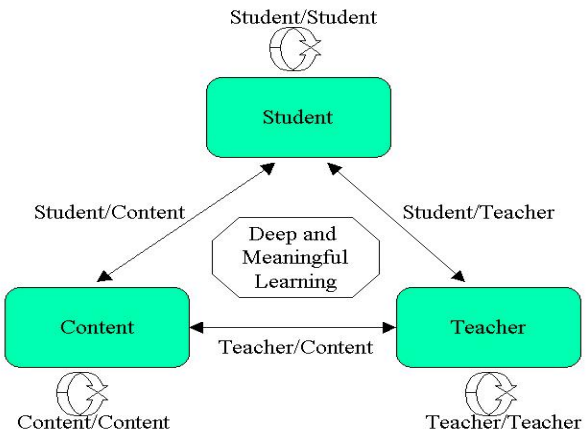

Figure 2: Channels of Interaction (Anderson, 2002, online).

Anderson's equivalency theorem (2002) further states that not all interactions need to be present; as long as there is at least one of the forms of interaction available on a high level. Which interactions would be present, would depend on costs and accessibility factors (Anderson, 2004, online).

Sufficient levels of deep and meaningful learning can be developed as long as one of the three forms of interaction (student–teacher; student-student; student-content) are at very high levels. The other two may be offered at minimal levels, or even eliminated, without degrading the educational experience.

High levels of more than one of these three modes will likely deliver a more satisfying educational experience, though these experiences may not be as cost or time effective as less interactive learning sequences.

Whereas, according to Anderson, it is not important which of the three forms of interaction is present, as long as there is at least one type, other authors disagree. Steinberg (1991) criticises the notion that interaction and learning are synonymous. Interaction without a plan is likely to lead to either no learning or even incorrect learning (1991, p. 100). Le Grange (2004, p. 88) adds to this, maintaining that the "mere exchange of information" is not necessarily learning. Mere interaction is therefore not learning and effective learning does not only depend on interaction. The emphasis should therefore be on the type of interaction suitable for the subject matter, the outcomes envisaged and the learning styles of the learners.

Whether all the types as described, represent interaction, is questioned by Steinberg, (1991) who sees reading course material, such as reading matter, film and television, as a one-way process, stating that "…a book does not respond to a reader's activities" (Steinberg, 1991, p. 13). If one revisits Wagner's (1994, p. 8) definition of interaction as stated above, then the concepts that are problematic, "Reciprocal events… two actions" need to be questioned. Is learner-learning material and content-content a two-way action and does the learner influence the learning material.

With the advent of technologically enhanced learning, a fourth type of interaction has emerged – that of learner-interface interaction. Hillman, Willis and Gunawardena (1994, p. 31) define this type of interaction as that which "…takes place between a student and the technology used to mediate a particular distance education process."

Within the diagram as presented by Anderson and Garrison, interface would form the outside boundaries within which the interaction takes place. It may be necessary to redefine interaction. Wagner's (1994, p. 8) definition needs to be expanded to include inanimate objects, such as computer screens, television screens and other technological devices. Learners therefore receive the learning materials, (be it through paper-based textbooks, notes, in class and/or technology) and have to transform this, processing, personalising and contextualising the information. In this transformation process, learners interact with the content, other learners, the instructors and the design of the content. According to Garrison (1999, online), it is the design of the content that holds all the different types of interaction together.

2.2.4.1 Student/ teacher (or learner/instructor)

Several authors have commented on the necessity of interaction between the student and the teacher (Lairson, 1999, Spady, 1970, Stolowy and Tenenhaus, 1998). Discourse between the different parties leads to higher levels of learning and the more effective integration of learning material and real-world situations. "The learning process must be constituted as a dialogue between teacher and student, operating at the level of descriptions of actions in the world" (Laurillard, 1993, p. 94). The interaction therefore, takes the form of a conversation between the learner and the teacher, but it must be beneficial to a better understanding and insight into the subject matter. "There is widespread agreement that high quality interaction between teacher and learners is an important element of effective teaching" (Kennewell, 2005, World Conference on Computers in Education).

Holmberg's didactical conversation (1995, p. 47) includes seven characteristics, which need to be in place before successful dialogue (and thus successful teacher-learner interaction) can take place. These include:

- Feelings of personal relations between instructor and student to promote study pleasure and motivation;
- Conversation concept may be successfully translated for use by the media available to distance students.

Guided didactic conversation fosters a personal relationship between the learner and the teacher, leading to greater motivation and thus improved learning (Kesley and

D'souza, 2004, online). However, one needs to look at the feasibility of the "guided didactic conversation" and the viability of it happening when student numbers continue growing and becoming too large. The question remains, how does one lecturer encourage personal interaction with more than 800 students?

2.2.4.2 Student /content (or learner/content)

"In dialogue, two or more people exchange ideas and beliefs… Dialogue therefore becomes an essential feature of their [students] making meaning and constructing knowledge... Similarly, learning from text involves a dialogical approach when learners attempt to explore the meaning the author is trying to convey" (Taylor, Marienau and Fiddler, 2000).

Student-content interaction has always been an important aspect of formal education, be it in the form of library study or the reading of textbooks (Anderson, 2004, online). Learner-content interaction therefore happens when a learner interacts with inanimate learning resources (Kesley and D'souza, 2004, online), but for effective learning to take place from this interaction, it must be more than merely reading the text itself. Hounsell (1984 as quoted by Taylor, Marienau and Fiddler), observed the following with regard to learning from a text. "In a surface approach, what was to be leaned was interpreted as the text itself. In a deep approach, the text was seen as the means through which to grapple with the meaning which underlay it." Ally (2004, online) takes learner/content interaction further by stating that interaction should also take place between the learner and the context (own emphasis), which allows learners to apply that which they have learnt to real-life situations. Authentic learning then takes place, which enables students to link knowledge and skills to their own lives (Van der Westhuizen, Gravitt, & Geyser 2004, p. 171).

2.2.4.3 Student/student (or learner/learner)

According to Damon (1984, online), peer collaboration is useful for "facilitating intellection discovery and the acquisition of basic knowledge", as well as for "complementing adult teaching". "Socio-cognitive theories of learning maintain that all learning is social in nature and that knowledge is constructed through social interactions" (Swan 2004, online). The third type of interaction refers to that between peers, where dialogue takes place within the student/learner body. Within this interaction, the communicating partners try to establish what has been said so as "…to reach common ground…. It is important that the members share their knowledge…" (Schweizer, Paechter and Weidenmann, 2003, p. 213).

Anderson (2004, online) goes further by stating that "The traditional lecture mode of delivery has medium levels of student-teacher interaction, usually low levels of student-student interaction and medium to low levels of student-content interaction." The applicability of this statement in the large classroom, where student-teacher and student-student interaction is minimal or in many cases non-existent, needs to be questioned. Factors such as noise level, audibility of students when making comments and lack of motivation to participate may, indeed, deliver a less satisfying educational experience if this were to be attempted. Interaction, as seen by the above, is essential for good learning to take place, but given the large number of students enrolled for some courses, this cannot happen effectively in the classroom. The problem remains that students need to work together, in order to make meaning of the content, to foster a better understanding of the material and to learn how to work together in groups.

The French sociologist, Emile Durkheim's concept of "collective representations" refers to the "…social power of ideas stemming from their development through the interaction of many minds" (Salmon, 2000, p. 28). Different methods of collective representations exist, of which, according to literature, cooperative and collaborative learning stand out as being the most effective.

Mehta (2004, p. 116) talks about a "little tool box" which every young person needs, to be part of the knowledge society. The tools in this toolbox include:

To learn how to learn – specifically to extract information

To learn how to communicate

Thus, in order for learning to be successful and for learners to be successful, not only in their present studies, but also when they become part of the working world, communication and interaction is vital. This is a recurrent theme throughout the literature and is crucial for success. However, what the literature does not appear to address, is the problem that interaction does NOT take place and thus, effective learning does not ensue. Students simply do not interact with one another, instructors or content and one of the main reasons for the lack of interaction is the size of the classes (Marsh, McFadden and Price, 2003, online). If lecturers continue to use the "old" methods of teaching, then, according to the proponents of interaction, they are not successful in making learning happen. Interaction needs to return to the learning arena. Alternative methods must be utilised, since many of the current methods are not successful. More importantly, the success of these alternative methods and the reaction of students to these methods need to be assessed, tested and evaluated. Students should be exposed to different forms of interaction and their experiences and reactions when this happens, must be investigated.

2.2.5 Cooperative and collaborative learning

Traditionally, learning has been an individual activity. A learner was given a task, and it was up to the individual to find information, make sense of this information and reproduce it in some way. When group-learning approaches are followed, learners participate in group-activities, which could be small group assignments, where the group is evaluated; it could be collaborative work on case-studies or it could be participating in discussions (Van der Westhuizen, Gravitt, & Geyser, 2004, p. 173). A subset of active learning is co-operative learning. With cooperative learning, students work on exercises in small groups. The exercises may be brief ('Think, Pair, Share') or the students may be required to resolve a fairly complicated exercise. The common bond among the variants is that the students uncover knowledge through small-group interaction, rather than by passively listening to lectures (Marburger, 2005, online).

Within the linguistic framework, the two terms, cooperation and collaboration, are used interchangeably. Within the educational environment, there is a marked difference between the two types of learning. "Cooperative learning" and

"collaborative learning" refer to learners working together in groups on tasks or issues, so that individual learning takes place through interaction in groups. Both terms referred to are not about competing with fellow members, but about "…using the diverse resources available in the groups to deepen understanding, sharpen judgement and extend knowledge" (McConnell, 1994, p. 13).

Johnson, Johnson, Smith and Sheppard (2005, p. 93 – 94) give a very specific slant to cooperative learning, which distinguishes it from collaborative learning. They refer to collaborative tasks as having "elements of cooperative learning", but the former involves "…joint work, social negotiation, peer evaluation and the sharing of responsibility in a group, optimising on complementarities and instilling collaborative skills", whilst the latter refers to having "…a mutual goal, positive interdependence, joint accountability and individual responsibility." The degree of structure in the group has also been used as a way to differentiate between the two concepts (Strijbos, Martens and Jochems, 2004, online). For the purposes of this study, the difference thus lies in the final result that is produced by the group; with collaborative tasks the group will hand in one final product, whilst with co-operative learning, each individual in the group will hand in his/her own product. Neither one of these is necessarily superior to the other in enhancing the learning process via group learning. What is true is that collaboration is a well-used and important form of social learning (Chan, 1995, p. 114).

Schweizer, Paecher and Weidenman (2003, p 121) summarise the advantages of group work as follows:

Advantage	**Description**
Qualitatively or quantitatively better joint task outcomes	Wider range of knowledge and skills
Better individual knowledge	Wider knowledge gains that incorporate multiple perspectives
Development of social skills	Helping, explaining, encouraging group members
Gains in motivation	Higher commitment

Table 5: Advantages of group work

Although the advantages and gains of group work are well documented, the realities of making use of this type of teaching methodology in difficult circumstances, such as large classes, with students of different cultures working together and classrooms

where seating is fixed, are not. Felder (1997) and Graham (1992), for example, refer to some of these issues, but their solutions are not always applicable to the unique problems facing a developing country, such as South Africa.

2.3 Problems relating to the face-to-face classroom

The national plan for the goal in Higher Education (2001, online) is that participation has to increase from 15% to 20% within the next 10 to 15 years. Given the current situation in South Africa with regard to recent mergers of Higher Education institutions, this will lead to even larger classes. Large classes may be cost effective for the institution, but there is widespread concern about the quality of instruction in these large classes (Marsh, McFadden and Price, 2003; Gibbs and Jenkins, 1992).

2.3.1 Large classes

The literature is not very specific when referring to the size of large enrolment classes. Riffell and Sibley (2005, p. 218) identify a high enrolment course as "…100+ students per section". Johnson's (2002) Business Communication class was 500 strong, DiBiase (2004, p. 48) reports on a group of 642 students enrolled for a geography course, whilst Naber and Köhle (2002) refer to groups of more than 1000. There is no formal definition of how many students make up a large class. What is clear is that the number of students in a class is such that individual relationships with the instructor are precluded, and students who want to speak out cannot do so (Gibbs and Jenkins, 1992, p. 11).

Johnson (2002) identified "Three Big Issues" which hinder the effectiveness of teaching and learning in a large enrolment course:

- Accessibility to course content: Students who missed a class, inevitably fell behind and catching up seemed impossible
- Effectiveness of large lecture instruction: Even though efforts were made to engage students, learning was largely a passive endeavour.
- Low level of connectivity: Time to interact was limited and getting to know students was impossible.

Twigg (2003) also refers to the problems encountered when she says, “Students in large lecture classes tend to be passive recipients of information, and student-to-student interaction is often inhibited by class size.” This is echoed by Naber and Köhle (2002), who state that “[Venues] are so overrun that students will actually fight for a place in the lecture hall...The lecturer passes information to his students by reading the information in question aloud. A lecture hall packed with a thousand students perched on every flat (or not so flat) surface surely is not a place to inspire a lively discussion of the latest development in this or that scientific field”.

Apart from the lack of opportunities to interact, Race (2001, p. 13) identifies two further drawbacks of large enrolment classes, namely, lack of motivation and lack of opportunities for remedial work.

Felder (1997) asserts that lectures do not have much educational value, since they make people watch and listen, instead of actively doing something. “No matter how good you are, you probably won’t be able to persuade most students to open their mouths in front of 120 classmates – it feels too risky for them. If you hope to move away from the museum-like aspect of most large lectures, you’ll have to try a different approach.” One approach could be to supplant personnel with technology – including e-learning, by making use of a blended learning approach or a hybrid model (Marsh, McFadden and Price, 2003, Murphy, 2002; Riffel and Sibley, 2005).

2.4 What is e-learning?

Technology-enhanced education is widespread and there are several terms used to indicate the use of technology in the learning process: e-learning, blended learning, hybrid models, Internet learning, distributed learning, networked learning, tele-learning, virtual learning, computer-assisted learning, Web-based learning, online instruction and distance learning are some (van der Westhuisen, 2004; Sanders and Morrison-Shetlar, 2001; Herselman and Hay, 2005).

Rich (2001) identifies five specific attributes of e-learning which distinguishes it from other forms of learning:

- It is Web-based
- There is a virtual classroom

- The curricula can be personalised
- Various learning experiences are present
- It has measurable results.

Recent literature does not necessarily agree with the above. Certainly, the latest writings indicate that e-learning does not only refer to the web/internet, and virtual classrooms do not always denote the presence of e-learning. Herselman and Hay (2005, p. 395), include the following technologies as e-learning devices: inter-, intra- and extranets, audio or video conferencing, television, video, satellites, DVD, and mobile phones to name but a few (see also Engelbrecht, 2003; Evalutech, 2004). Even so, all of the above terms imply that there is some distance between the learner and the lecturer and that some type of technology is present. For the purposes of this research, Le Grange's (2004, p. 87) straightforward definition of e-learning will be used:

E-learning is "learning facilitated online through network technologies."

Initially, e-learning was used primarily by and for distance education (Hiltz, 1994, French, 1999). This has changed; e-learning is progressively becoming a partner in face-to-face education. Increasingly, organisations are adopting online learning as the main delivery method to train employees (Simmons, 2002). At the same time, educational institutions are moving towards the use of the Internet for delivery, both on campus and at a distance (Ally, 2004; Bourlova, 2005). Online learning is now becoming omnipresent at all levels of education and in all institutions of learning. It originally started with distance education, but campus-based students are also mixing and matching their classroom and online learning in all sorts of often unanticipated ways (Davis: 2004). It is "…becoming an extension of the classroom and learning facilitation" and complements what happens in the classroom (Herselman and Hay, 2005; Paloff and Ratt, 2001, p. 109). The computer is not only a powerful learning tool, but is becoming vital in communication (McLean and Murrell 2002).

Figure 3 illustrates the Modes of e-learning (Bourlova, 2005, p.10)

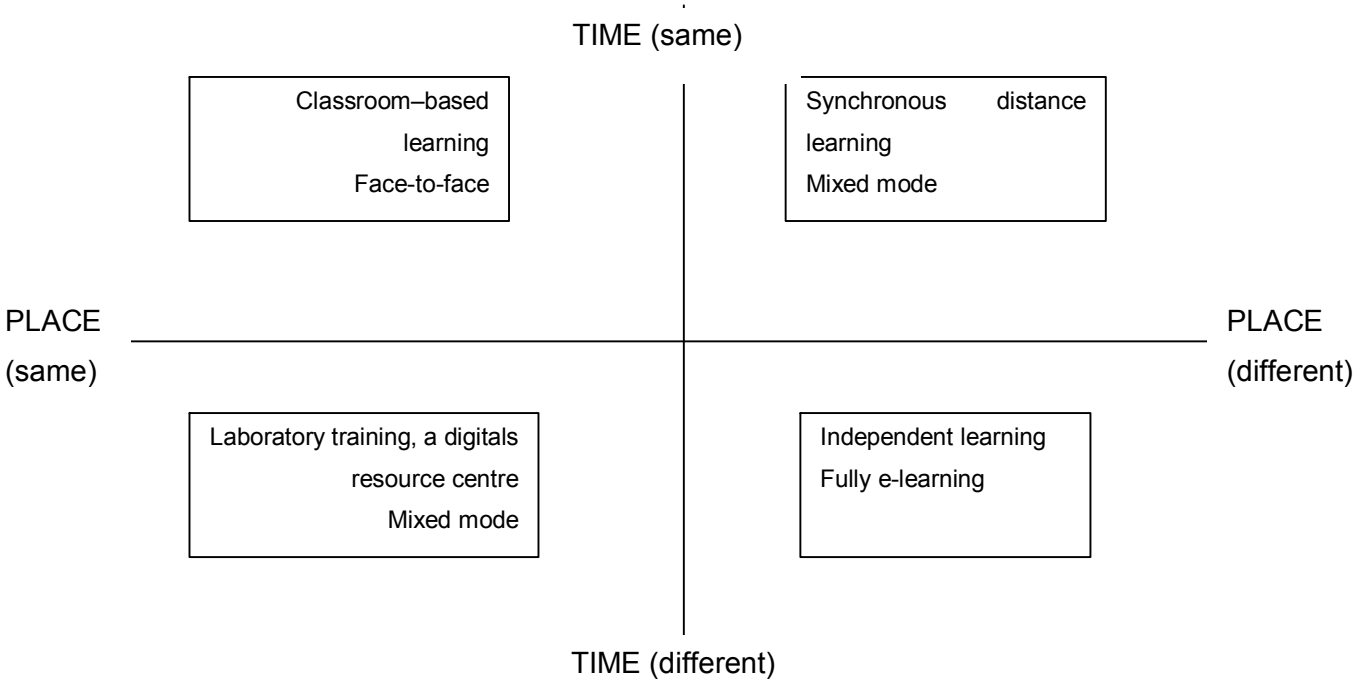

Figure 3: Modes of e-learning

The time/place continuum is understood best when referring to this figure. Where face- to-face restricts the learner, and total e-learning demands much in terms of motivation and self-discipline, the mixed mode allows for a combination of flexibility and extrinsic motivation to influence the learner (Bourlova, 2005). The combination of different time and place settings would depend on the students and the subject matter.

2.4.1 Blended learning.

The blended approach of instruction refers to a combination of technological and traditional classroom instruction, when some of the face-to-face sessions are replaced with virtual or online sessions. The approach maximises each method's benefits, in order to improve learner outcomes and/or save costs (Marsh, McFadden and Price, 2003; Osguthorpe and Graham 2003; Riffell and Sibley 2005; Young 2002; Garnham and Kaleta, 2002). Different terms are used for this approach; Hybrid learning, Mixed mode teaching, "Click and Brick classes", are but some (Lago, 2000). For the purposes of this study, the term, blended learning, will be used.

The purpose of blended learning may different with different instructors. Osgurthorpe and Graham (2003) identify six goals for educators when designing the blended environments, encompassing the main goals of blended learning. These are:

1. Pedagogical richness: The central focus of the intervention should be to improve student learning (see also Prammanee, 2003; Riffel and Sibley, 2005; DiBiase 2004; Garnham and Kaleta, 2002; Aycock, Garnham, and Kaleta, 2002).

2. Access to Knowledge: This allows for students to consult with different sources, to compare information and to make better-informed decisions – something that a single textbook cannot do (see also Riffel and Sibley, 2005; DiBiase 2004; Herselman and Hay, 2005).

3. Social interaction: Students are able to share, not only in an academic atmosphere, but also in a social one. They have the option of communication in the online environment or in a face-to-face setting (see also Shank, 2004; Aycock, Garnham and Kaleta, 2002).

4. Person Agency: Personal choices for students, thus allowing for learner-control, increase (see also Riffel and Sibley, 2005; Garnham and Kaleta, 2002).

5. Cost Effectiveness: Some authors believe that the blended approach will free seats in lecture venues, thus allowing for lecture venues to be free so that more students could be enrolled (see also Prammanee, 2003; DiBiase 2004; Young 2002; Sands, 2002).

6. Ease of revision: The majority of blended learning environments are created by the teachers themselves, thus the potential is there to create simple, easy to change programmes (see also Prammanee, 2003; Riffel and Sibley, 2005).

The literature is vague on one issue – that of a single best mix, standard approach to a blended course. Whether class time is reduced by a “significant portion” (Garnham and Kaleta, 2002) or by reducing only one lecture by 30 minutes, (Aycock, Garnham and Kaleta, 2002), there seems to be no single solution for a so-called ‘best-fit’ or ‘one-size-fits-all’ approach. What seems to be the general belief is that each

instructor should spend a great deal time on redesigning the course and then make use of as much or as little of each of the two methods as is deemed necessary (Aycock, Garnham and Kaleta, 2002). Brown (2000, online) refers to this principle as "the 90-10 Rule". This rule suggests that 100% face-to-face and 100% online are inferior to blended courses and that the optimal mix should be between 90-10 and 10-90.

Agreement is reached on the issue of delivery. The majority of e-learning and blended learning programmes use computer-mediated instruction as their technology 'partner' (Evalutech, 2004, p.1). Online instruction occurs when learners use the Web to go through the sequence of instruction, to complete the learning activities and to achieve learning outcomes and objectives (Ally, 2004, online).

Furthermore, courses are built around or upon the use of certain scaffolding or reusable objects, one of these being the learning management system (LMS). "At the core of most e-learning [hence blended learning] programmes is a learning management system" (Herselman and Hay, 2005, p. 395). "The course may be constructed in a 'Content Management System' (CMS). The CMS version may then be incorporated in a 'Learning Management System' (LMS) to facilitate communication, collaboration and administration" (Ask and Haugen: 2005, WCCE). Perhaps one way of bringing back communication and interaction to the classroom is to turn to a blended model of teaching and learning. Students could interact via technology – specifically computer integrated teaching – where the possibilities and options are vast and where the problems relating to larger classes are non-existent. Students would have access to notes and course content without having to go to the lecturer; learning would be much more active by placing some of the tasks online and there would be enough time to foster interaction. This needs to be investigated and tested by making use of students' reactions and comments about the use of an LMS.

2.4.2 Learning Management Systems (LMS)

Gartner's E-learning Glossary (Lundy, Harris, Igou, &Zastrocky, 2004, p. 230) identifies a Learning Management System as "A full infrastructure on which e-learning can be built and delivered." a Learning Management System has six main components which include "…the ability to launch a course or interact with a learning content management system (LCMS), as well as a Learning Programme Administration which includes test and assessment capabilities" (p. 230).

The most popular LMS's in South Africa are at present WebCT, Blackboard, Electronic campus system, e-College and Groupware (Herselman and Hay, 2005, p. 400). These systems have, amongst others, features such as bulletin boards, chat rooms, online quizzes, whiteboards and integration with other software programs (webct.com 2004; Backboard 2004; Groupware 2004; Ecollege 2004; Electronic Campus 2004). A distinct advantage of using a Learning Management System is that the tools are accessible only by those registered for the course, thus protecting the participants from external parties (Longe and Ogege, 2005).

2.4.3 Why did e-learning not fulfil its early promises?

Initially, e-learning was seen as the panacea of education. Le Grange (2004, p. 87) describes the growth of e-learning as "explosive, unprecedented, amazing and disruptive." E-learning was portrayed as a "revolution in Higher Education" and "…the vehicle for transforming all education and learning in the twenty-first century" (Le Grange 2004, p. 87). Brown (2000, online) stated that "Computer enhanced learning will transform the practice of education in all country, at all levels and the world will be a better place for it!" E-learning was hailed as the solution to all problems and a large number of institutions jumped on the proverbial bandwagon of technology, placing entire courses online, often with disastrous effects. Lecturers, learners and in some instances, management, did not buy into e-learning as expected (Engelbrecht, 2003, p. 41). Reasons cited for the reluctance to buy-in are summarised in Table 6.

Lecturing Staff	Students	Management
Inability to provide quality content	Ineffective interaction experiences	Upfront costs of technology are vast
Lack of training in new technologies	E-learning merely being a replication of the classroom	HE institutions are not profit driven
No incentives (financial or promotional)	Lack of motivation by students to complete the course	Lack of E-readiness
Limited technical support	Unfamiliar with computers	
Labour intensive, time-consuming, added workload,	Access to computers	
Intellectual property rights	Resistance to change	
Academic dishonesty		
Lack of equipment		
Resistance to change		

Table 6: Lack of buy-in into e-learning

(Engelbrecht, 2003; Yang and Cornelious, 2005; Wilson 1998; Galanti, 2004; West and Graham, 2005; Quiness and Hurst 2005; Schweizer, Paechter and Weidenmann, 2003)

Le Grange (2004, p. 88) further voices his concern about the "…flagrant disregard for some of the educational and philosophical problems associated with e-learning. For example, is mere retrieval or exchange of information, learning?" Many authors support his view in that much of which was called e-learning was merely rerouting the pick-up point of class notes and reading material – the so-called 'paper-behind-glass syndrome' (Evans, Gibbons, Shah and Griffin, 2004; Cronje, 2002).

It would be lacking if the Kozma-Clark debate on the effect of media on teaching were not part of the literature review of this research. The different points of view in this debate hinge on the effect that media has on learning. On the one hand, Clark (1983, p. 445) argues that the use of media is not the driving force behind effective learning, but that media "…are mere vehicles that deliver instruction, but do not influence student learning…" Kozma (1994, online), on the other hand, is of the

opinion that the "…processing capabilities of the computer can influence the mental representations and cognitive processes of learners". Thus, it is the media that facilitate the learning process and the media is more than the vehicle. After several studies on distance education, Russell (1999, p. 14) concludes, "No matter how it is produced, how it is delivered, whether or not it is interactive, low-tech or high-tech, students learn equally well". However, just more than 10% of Russell's studies included computer-based learning and these studies were done before the explosion of the internet.

The debate continues – what is it that improves learning – the actual technology, or the pedagogy behind it? However, the issue is no longer whether the media make a difference or not, since the media, and more specifically technology, is now an integral part of the society in which present and future students exist (Prensky, 2001). Duffelmeyer (2002, p. 359) does not agree with this statement. She refers to Haas (1996) and Barton (1994) as she quotes them by stating that it is a myth to think that "…we can't do anything about them (technologies), so we might as well accept them". Possibly, the question that should be asked is not whether the media (or technology?) may or may not influence learning, but whether lecturers can still afford to go to the lecture hall without making use of some kind of technology. However, technology should be used in a manner that is pedagogically sound, adds value to the teaching and learning process and is used so that it adds to the satisfaction of the students.

Wills and Alexander (2000) have taken this debate further by including other role players in the equation. "Technology in itself does not change or improve teaching and learning. Attention to management processes, strategy, structure, and most importantly roles and skills, are the key to successfully introducing technology in university teaching and learning". One of the "roles and skills" they refer to could be that of the lecturers and students themselves; if they do not accept or appreciate the use of technologies in the learning process, it would be doomed to failure. Both lecturers and students have to buy in to the concept of the use of technology. *Attitudes towards* e-learning, and not e-learning itself, could thus be the downfall of technology's use in education.

A hotly debated issue is that of the effect of e-learning on workloads. Quinsee and Hurts (2005, online), for instance, state that one of the biggest misnomers of e-learning was that it would decrease the workload of both the student and the

instructor. In another study done by Utts, Sommer, Acredolo, Mather and Matthews (2003, online), where a course in Introductory Statistics was offered both in the traditional face-to-face manner as well as with mixed mode teaching, the authors concluded that "…instructor time spent on each version of the course was almost identical." The evidence is not conclusive and much more research needs to be done on this specific aspect. If, however, it is found that the workload increases, it could impact negatively on the use of technology, by staff, as well as students.

2.4.4 How can we use e-learning to improve on-campus learning?

Lairson (1999, p. 187) refers to new ways of thinking when he asks the following: "What is the actual purpose of class time in courses today? Is this an optimal use of the time of students and faculty? Can the Web make face-to-face class time more productive?" Le Grange (2004, p.94) adds to this by stating that we cannot ignore the effects of technology; "…we will have to find ways of working through the issues that we are concerned about."

"E-learning is a transformational process that posits new challenges for staff and students, both in educational methods and support" (Quinsee and Hurst, 2005, online). According to Smith and Ferguson (2002), there are several advantages of online delivery. The advantages include deeper levels of discussion and more time for students to consider their responses in the asynchronous discussions.

In a study done by West and Graham (2005, p.20), the researchers found five ways in which technology was impacting positively on learning. In Table 7, I summarised the five ways and identified some of the authors who support West and Graham.

Ways	How	Literature support
Visualisation	Learner-content interaction	Kehoe, Tennent and Becker 2005; Murphy 2003; Naber and Köhle, 2002;
Interaction	Learner-learner and learner-teacher	Naber and Köhle, 2002; Swan, 2004; Pena-Shaff and Nicholls (2004); Aycock, Garnham and Kaleta (2002); Woods and Ebersole; 2003; Brown 2000;
Reflection	Learning experiences	Kehoe, Tennent and Becker 2005; Murphy 2003; Swan, 2004;
Authenticity and Engagement	Opportunities for real-life activities	Naber and Köhle, 2002; Pena-Shaff and Nicholls (2004); Aycock, Garnham and Kaleta (2002); Merrill 2002;
Practice	Quality and quantity	Woods and Ebersole; 2003; Merrill 2002; Brown 2000.

Table 7: Positive impact of technology on learning

In Pena-Shaff and Nichol's (2004, p. 206) analysis of student interaction, the authors found that, although there were not many, postings would be longer than in-class discussions would allow, and students could not interrupt one another as they would in a face-to-face class. It is therefore apt for Anderson (2004, online) to state that "The greatest affordance of the Web for educational use is the profound and multifaceted increase in communication and interaction capability that it provides."

"A learning environment is a place where people can draw upon resources to make sense out of things and construct meaningful solutions to problems. Adding 'constructivist' to the front end of the term is a way of emphasizing the importance of meaningful, authentic activities that help the learner to construct understandings and develop skills relevant to solving problems" (Wilson, 1998, p. 3). Wilson expands this definition to include "communities" of learners who come together on projects and support one another (1996, p. 5). "The social constructivist approach lends itself in many ways to e-learning" (Ask and Haugen, 2005, WCCE). Computer Conferencing (CC) therefore seems to fit the constructivist, as well as the collaborative learning mould.

Contreras-Castillo, Favela, Perez-Fragoso and Satamaria-del-Angel (2004) report on studies done in the United States where the major problem reported by students is the lack of interaction with peers. Guidera's (2003/2004, p. 164) findings indicate a "…consensus among the study population that online instruction is less effective at interactions both between faculty and students as well as between students themselves".

In direct contrast, Macdonald and McAteer (2003) found that online media "…can be used to join up people and resources, supporting communication and the sharing of information between staff and students, regardless of time and location". Salmon's (2000, 2002) extensive work on e-tivities (active and interactive online learning, 2002, p.3) supports the idea that online media may be an effective way of fostering interaction in groups. Thus, a lack of conclusive evidence regarding the usefulness of e-learning with regard to interaction is apparent.

Furthermore, simply replacing all face-to-face contact with e-learning is not an option. Learning is a social process, and the development of skills beyond mere competence "requires time and face-to-face contact" (Dreyfus 2002). In addition, the lack of social contact when using e-learning is a topic which needs further exploration. "… e-learning scenarios have often ignored the learner's need for a socially rich communication in phases when learning contents are discussed" (Schweizer, Paechter and Weidenmann, 2003, p. 214). A combination of e-learning and face-to-face instruction should include the best aspects of the real and the virtual classrooms (Concannon, Flynn and Cambell, 2005).

Apart from West and Graham's five positive aspects of e-learning, the following have also been identified as e-learning characteristics which impact positively on learning:

- Time independency (asynchronous learning) (Cochrane and Robinson, 2004)
- Easier access for handicapped students (Naber and Köhle, 2002; Cochrane and Robinson, 2004)
- Lack of discrimination due to facelessness (Paloff and Pratt, 1999)

Specifically, the reaction to online content delivery reinforces the benefits of using technology as a way of assisting students, particularly those with English as a

second language (Kehoe, Tennent and Becker, 2005). Students have more time to read the content and are able to reflect more fully before they have to contribute.

In making use of face-to-face, as well as online modes, i.e. the blended model, the benefits of each mode can be reaped. However, it should not be seen simply as an add-on or a way of lessening the lecturer's burden without the student benefiting; it should be beneficial to both teaching and learning.

E-learning may also assist learners to develop more generic skills which are not necessarily used only in learning, but may be used in working environments as well.

2.4.5 Note-taking vs Note-making

Note-making is an essential skill that a university student needs, but often lacks (Grabe, 2005). During lectures, most students turn to writing. However, whether what they are writing down is indeed what the lecturer wants them to write down, is not always clear (Bligh, 1990, p. 117). Brown and Race (2002, p. 114) distinguish between taking notes and making notes; where the former is merely a copying of what the lecturer says/portrays on the whiteboard, the latter is a process of taking what is said and turning it into their own, personalised notes. Moreover, time does not always permit students to write down the notes and concentrate in class (Bligh, 1990, p.120).

The internet now offers a practical way of assisting students to acquire this skill. If the notes are loaded before the class, students can print them out beforehand. Grabe (2005) notes an improvement in learning in cases where students accessed the notes before class. In Couch's study (1997), two distinct advantages of placing notes on the LMS were observed: students did not have to pay for the notes (which they might even lose), and lecturers did not have to prepare the notes in advance; thus, they were able to revise material or add on during the term. In a subject such as Economics, where the chances are that this is common practice, it could prove most useful.

2.4.6 Groupwork

Apart from enhancing learning, cooperative learning may also affect the way in which students interact with one another. Intergroup relations and more specifically, cross-cultural relations, can be fostered through cooperative learning (McConnell, 1994, p. 25). Gabriel's (2004) study on group interaction online, found that "…members of the small learning groups did learn from interaction … When these were shared in the context of the online work, students learned from one another."

2.4.7 Questioning

This could be an activity which could lead to effective learning – both asked to the students, as well as asked by the students. Doing this in a large class could lead to disruption and disturbance and could also be utilised only by the more confident student (Brown and Race, 2002, p. 118).

2.4.8 Cautioning against e-learning

Studies done on e-learning do not necessarily support all aspects of e-learning. Kehoe, Tennent and Becker (2005) warn that results from their study show that some students still prefer traditional forms of teaching and learning and at the very least, would prefer a choice in how they engage with the learning activities. This is echoed by Maloney (1999 p. 21) who claims that "Some students learn better in a course in which they can interact with the professor in person. Others, however, thrive in an online environment. Shy students, for example, tend to feel liberated online, as do many foreign [second language] students who are unsure of their spoken English". There is, furthermore, still the matter that the method being used by the lecturer is not necessarily the students' preferred method; the learning style of the student must also be accounted for.

Role players in education "…continue to argue for updated learning and schooling models and the increased use of new and emerging electronic learning technologies" in order for students to cope more effectively with the "…increasingly changing and complex world" (McCombs and Vakili, 2005). Content is abundant, but context and

meaning are scarce commodities. This changes the purpose of education; learners and teachers become co-learners and partners in "…learning communities that go beyond the school walls" (McCombs and Vakili, 2005). E-learning might be the solution to many of the problems faced by HE, but in order for that to happen, traditional roles are going to have to change in several ways.

2.5 How might teacher and student roles change?

"Online education is widely accepted as student-centered education" as opposed to "professor-centered" (Yang and Cornelious, 2005). This implies that the instructor will become more of a facilitator than a lecturer. Goodyear (2001) has derived indicators of teacher and student role changes when moving from 'traditional' teaching (for example, lectures), to online learning, which involves collaborative online learning. In this environment, the professor and the student become part of a community of learners, instead of the traditional way where roles were regimented (Yang and Cornelious, 2005; Schweizer, Paechter and Weidenmann, 2003, McCombs and Vakili, 2005).These role changes are summarised in Tables 8 and 9.

Traditional	**New role**
Oracle and lecturer	Consultant, guide and resource provider
Provider of answers	Expert questioner
Provider of content	Designer of student learning experiences
Exercising total control of the teaching environment	Sharing with the student as fellow learner
Structure provision	Encouraging more self direction

Table 8: Teachers' roles changes

(Adapted from O'Leary, 2005, online)

Students' roles may also change, in that they move from being "…passive classroom learner[s] into a more active online enquirer" (Yang and Cornelious, 2005).

Traditional	New role
Passive receptacles for hand-me-down knowledge	Constructors of their own knowledge
Memorisers of facts	Complex problem-solvers refining their own questions and searching for their own answers
Individual learner	Working as group members on more collaborative/cooperative assignments
Acting as blank slates	Acting as autonomous, independent, self-motivated managers of their own time and learning process
Observing the teacher's expert performance or learning to pass the test	Using knowledge

Table 9: Students' roles changes

(Adapted from O'Leary, 2005, online)

The focus is hence on "learner-centeredness" (McCombs and Vakili, 2005, p. 1584) which is defined as follows:

"Learner centeredness is the perspective that couples a focus on individual learners – their heredity, experiences, perspectives, backgrounds, talents, capacities, and needs – with a focus on learning – the best available knowledge about learning and how it occurs and about teaching practices that are most effective in promoting the highest level of motivations, learning and achievement for all learners."

The learning-centred principles identified by the American Psychological Association include four categories: Cognitive and Meta cognitive; Motivational and Affective; Developmental; and Social and Individual-Differences Factors (McCombs and Vakili, 2005, p. 1586). Thus, the implementation of technology in the classroom implies that a totally new set of rules should be developed and used by both the teacher and the learner. By using a blended learning strategy, Integrated Multiple Learning Strategies (IMLS) are created for a feasible "student-centered learning (e-Learning) model" (Al-Khanjari, Kutti and Ramadhan, 2005). The crux of the matter, therefore, is to "…understand the nature of e-learning from the learner-centered perspective" (Al-Khanjari, Kutti and Ramadhan, 2005).

One of the problematic issues is the perspective of the students who have been making use of a blended model. Little research on the blended model and the pedagogical issues underlying the blended model is available. Macdonald and McAteer (2003) refer to the lack of research by stating the following: "Yet to date, much of the research into e-learning has focused either on the evaluation of online course design and delivery, with implications for course development teams or on the practicalities of completely online course presentation". Bourlova (2005) is more emphatic in his reference to the need for research in this area, when he looks at changing technology, an increasing need for Higher Education and the way that e-learning is currently used:

"The fact that technological processes occur so rapidly, and profoundly affect social processes, raises the demand for a precise analysis of current conditions of on-campus infrastructure, students' experiences in education, as well as the management strategies in modern HE Institutions. A better understanding of the relationships between e-learning and these other factors will suggest strategies that university administration can utilize to manage better the pressures caused by increased demand for higher education…Currently the biggest use of e-learning is not intended for the learners remote from campus. WebCT Inc., manufacturers of the most widely used online learning platform, estimates that more than 80% of WebCT applications are used for campus-based teaching. Surprisingly, though, little attention had been paid to the possible academic, administrative and social implications of using e-learning extensively on campus."

One also needs to continue to look at the effectiveness of e-learning in relation to other methods of teaching. "Further research will determine whether e-learning is better than traditional instructional methods and check the pedagogical methods that are employed in using e-learning tools" (Longe and Ogege, 2005). The effectiveness of e-learning in student support also needs to be analysed and researched. "However, we have tended to neglect the contribution of other modes and media used in learner support, and there has been a critical lack of overt integration of online use with other good learning support systems, as part of a cohesive strategy" (Macdonald and McAteer, 2003).

2.6 Previous studies

Several studies have been undertaken in the field of communication, interaction and e-learning. Hoskins and van Hoof (2005) looked at motivation and ability in a study on dialogue via the online learning environment and found that it may influence achievement, but does not address the issue of diversity and the effect thereof. Yip's (2004) study on 30 undergraduate psychology students at the Open University, Hong Kong, found that students generally prefer online teaching to the traditional classroom lecturing because they enjoy the various ways to communicate with instructors, tutors and fellow students for the sake of collaborative learning. However, this was a very small group of learners in a subject in the Humanities field of learning. Research on using e-learning dialogues (Webb et al., 2004) using e-learning dialogues as an integral component of a taught module, found that students' participation in these dialogues is positively correlated with module learning outcomes.

In a comparison of groupwork between face-to-face and online groups in an 'Introduction to the Psychology of Learning' course in Munich, Schweiser, Paechter and Weidenmann (2003) found that it does not depend on the setting, but on the task; therefore, students do not have to meet face to face. In this course, consisting of 96 males, only learners in their first-year, groups of 4 (face-to-face) or 6 (Computer Mediated Communication), had to complete a specific task over a period of 3 weeks. The study does not consider gender-specific issues in groupwork.

The use of WebCT in the study of medicine was investigated by McLean and Murrell (2002), where 200 first-year students from diverse backgrounds, found communication and information access online useful and benefited from getting to know the rest of the students in a virtual world. They found that the most useful aspect of the LMS was that staff could upload resources and concluded that online work should be graded in order for students to participate actively and effectively.
Storey, Phillips, Maczewski and Wang evaluated the usability of Web-based learning tools and state that "…very few case-studies have been conducted to identify potential usability issues with these tools" (2002, p. 91). They furthermore assert that no studies had been done on both the usability and the impact on the potential users. This study looked, amongst others, at the students' perceptions of how these tools influenced their learning. Fifty-four 3rd and 4th year computer science students in

Canada were included in this study. Their findings may be summarised as follows: "Web-based course supplements are widely accepted, even expected" (p.99). This is confirmed in the work of Haywood, Macleod, Haywood, Mogey and Alexander (2004). Students in Higher Education take ICT for granted since they use ICT daily and effortlessly for studies and reactions.

The relationship between students' attitudes towards e-learning and the effectiveness of e-learning is the focus of Henning and van Rensburg's (2002) study. An enquiry into students' engagement with online courses on campus found that constructivist learning with electronic networks creates enhanced learning opportunities for students who embrace it, but creates turmoil in those who do not.

With reference to Economics teaching, not much has been done in this field. Marburger (2005) states that despite the attention paid to cooperative learning, relatively little research has been conducted in economics education to measure its impact on learning.

In conclusion, Figure 4 illustrates the problems on the one hand and possible solutions on the other.

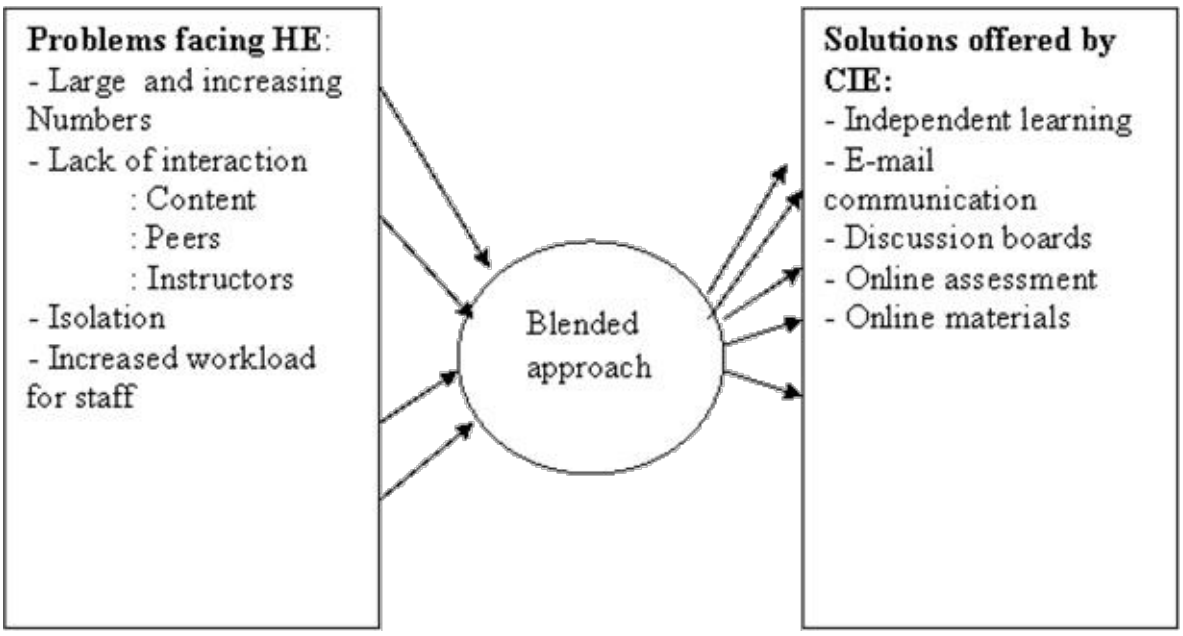

Figure 4: Problems and possible solutions

(Adapted from Brown 2000)

Hence, the need that has been identified leads to the research question:

What value does a Learning Management System add in promoting interaction in large classes?

2.7 Conceptual framework

In order to make sense of the data collected and to be able to answer the research question, a conceptual framework has to form the basis of the research project. The conceptual framework is illustrated in figure

Pedagogical Problems	**Intervention: Engagement Theory and Conversation Theory**	**Tools**	**Immediate Outcomes: Contingency theory**	**Long term outcomes: Grounded theory**
Lack of interaction: Peer	**Learning Management System** UNIVERSITEIT VAN DIE VRYSTAAT UNIVERSITY OF THE FREE STATE YUNIVESITHI YA FREISTATA WebCT	Discussion board 	Increased communication Enhanced computer literacy Reasoning skills	Improved understanding and integration of Economics Improved learning skills and retention rates
Lack of interaction: Lecturers		Discussion board  E-mail Notices 	Increased communication Increased understanding Increased communication Increased communication	
Lack of interaction: Content		Quizzes  Course material  Notes  My progress 	Increased preparation Additional learning Integration skills Improved note taking Self-pacing	

Figure 5: Conceptual Framework

The research question for this study focuses on the use of computers to foster communication, contact and interaction. It is therefore necessary to look at the theories which emphasise the relationship between communication and effective learning. Two theories of communication and learning are relevant to this study: Pask's Conversation Theory (Boyd, n.d., online), and Kearsley and Schneiderman's Engagement Theory (Miliszewska and Horwood, 2006).

Students and lecturers are, in effect, managers – the students have to manage their own learning and the lectures are managers of the courses. Decisions made by these parties may not necessarily be made long in advance, because of the nature of the context in which teaching and learning take place. The immediate decisions made the students and the lecturer informed by Burns and Stalker's Contingency Theory (Jones, George and Hill, 2000, p. 62) and the long-term effects of the intervention finds its foundations in Glaser and Straus's Grounded Theory (1967).

Pask offers a "…cybernetic and dialectical model for the construction of knowledge", which implies interaction between two participants (Boyd, n.d., online). Although Conversation Theory stems from the pre-technology period (1975), one of its applications is the use of the discussion board, where interested parties engage in meaningful conversation on given concepts. These concepts are discussed in an informal and relaxed manner at a time which is suitable for the participants.

The basic premises of Engagement Theory are that students must be "…meaningfully engaged in learning activities through interaction with others and worthwhile tasks" (Kearsley and Shneiderman, 1999, online). Although engagement does not necessarily imply the presence of technology, "…technology can facilitate engagement in ways which are difficult to achieve otherwise" (Kearsley and Shneiderman, 1999, online).

Engagement Theory is based on three components, also called 'Relate-Create-Donate' Learning' activities which:

- occur in a group context (i.e., collaborative teams)
- are project-based
- have an outside (authentic) focus

Contingency Theory explains the decisions made by the manager when confronted by a situation; the crucial message being that "…there is no one best way to organize" (Jones, George and Hill, 2000, p. 62). In the case of teaching and learning, the learner is the manager of his/her own learning and the teacher manages the teaching situation and makes decisions based on the immediate information available. Very often, this information is based on the class in front of the lecturer and decisions are made on the grounds of age, size of the class, background and composition.

Grounded Theory begins with a research situation. In this study, the situation occurred when classes became too large, interaction and conversation did not take place and effective teaching and learning was not always present. In Grounded Theory, the researcher has to observe how each of the participants acts or reacts. In this study, I observed, interviewed and communicated with the students via different data collection instruments. A priori decisions about each round of data collection were not formed; rather, the information gathered was used to decide upon the next course of action. Grounded Theory does not test a hypothesis – the research has to explain itself. The aim of Grounded Theory is to understand the situation as it is.

2.8 Conclusion

Chapter 2 explored the current writings and studies done in the field of teaching and learning in Higher Education. These studies/theories formed the basis for the case-study, conducted at the UFS, which dealt with Economics first- year students and their experiences of a blended learning model.