

Chapter 3

Research Design and Methodology

3.1 Introduction

The research problem emphasises the need to investigate ways in which contact with students and within the student group may be fostered by making use of electronic media. In Chapter 1, the outlay of this thesis was presented. Chapter 2 will discuss the research design and methodology used in order to address the problem, and subsequent research questions as stated. The rationale for this study is to observe whether the blended learning model may be used effectively in fostering a culture of interaction with and amongst students. The objective was to explore and analyse Economics first-year students' experiences of a blended learning model. Data were collected by means of unstructured and semi-structure questionnaires, focus group discussions, informal discussions and course evaluation, and were captured and analysed. Each method will be described and discussed. Methods to ensure the trustworthiness of the findings included member checks and crystallisation and this will also be further elaborated. The chapter concludes with a consideration of the sources of error and shortcomings.

3.2 Conceptualisation

During the period 2000 – 2004, the UFS's on-campus enrolment increased from 10 862 to 17 255, an increase of almost 59% (A century of excellence, 2005). According to the University's mainframe (www.uovs.ac.za), the enrolment in the Economics first-year, second semester class increased by 73% over the same period. Yet, the number of staff members teaching the course did not increase exponentially. The result is now that the number of students in classes are huge (up to 800 students being lectured and assisted by one lecturer) and there simply are not enough venues on campus to run effective tutorial classes.

This leads to the problem: how does a lecturer improve on or even merely sustain the quality of teaching and learning, and how can a lecturer be accessible to students, given the lack of resources such as time and venue space? One solution was to make use of other methods of communication with the students, which did not need a huge capital outlay and which could be implemented without much disturbance, but would still be attractive to the students. Since WebCT as Learning Management System (LMS) had already been installed on the UFS campus network, although not optimally utilised by staff, I investigated the possibility of using this LMS. Initially, during the first semester of implementation, it was used only for online quizzes. During the second semester of that year, notes, additional learning materials and minimal communication (announcements) were made available via the use of the LMS. In the third semester of using this mode of delivery and communication, funding was obtained, tutors were appointed and a-synchronous discussions were added to the blend.

Nevertheless, it was not clear whether this blended method was succeeding in its goal: to improve the students' experiences of teaching and learning.

The objectives of this study are therefore to answer the following:

- Do students use the LMS to interact with lecturers?
- Can a Learning Management System be effectively used to create interaction between students and lecturers?
- How do students experience online interaction with the lecturer?
- Do students use the LMS to interact with peers?
- How do students experience interaction with peers in the online environment?
- Do students believe that online interaction with peers is effective?
- Do students use the LMS to interact with content?
- Which of the different components of the LMS affect students' learning experiences?

From the objectives, the following sub-questions emerged:

- How do students use technology to interact with the lecturer when classes become too large to manage effectively?

- What is the relationship between LMS use and students' experiences of peer interaction?
- What possibilities exist to encourage students to interact with content by making use of an LMS?

The main research question of the study is the following:

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

3.3 Research paradigm

It is often a daunting task to choose an approach for a research project. "Deciding how to study the social world has always raised a number of key philosophical debates" (Snape and Spencer, 2003, p. 11). The questions asked in this study focused on how students experienced the LMS and why they felt that way. It was then my role as researcher to observe the students whilst in their learning environment and to interpret each individual's experience. Burrell and Morgan's two-dimensional matrix (1979, p. 220), presupposed different ontological and epistemological frames of reference, where one dimension refers to the nature of social science and the other to the nature of society. This allows researchers to classify their research according to the four different sociological paradigms:

Functionalist Paradigm:

Interpretivist Paradigm:

Radical Humanist Paradigm:

Radical Structuralist Paradigm:

Burrell and Morgan (1979, p. 25) explain the uniqueness of the four paradigms as follows: "The four paradigms are mutually exclusive. They offer alternative views of social reality, and to understand the nature of all four is to understand four different views of society. They offer different ways of seeing. A synthesis is not possible, since in their pure forms they are contradictory, being based on at least one set of opposing meta-theoretical assumptions. They are alternatives, in the sense that one can operate in different paradigms sequentially over time, but mutually exclusive, in

the sense that one cannot operate in more than one paradigm at any given point in time, since in accepting the assumptions of one, we defy the assumptions of all the others".

Deciding in which of the four quadrants one's study will fall, raises important methodological implications and therefore implies certain data collection methods. The objective was to study individual student's experiences; thus, this study lies within the Interpretivist paradigm, which is illustrated in Table 10:

Interpretivist Paradigm	This Study
Reality does not lie outside the individual, but each person is subjectively involved in his or her experiences.	The reality of each student's experience lies within the individual and each of the participants was subjectively involved in his or her experiences.
Research in this paradigm focuses on observing the participant in action.	I observed the students within their Ekn 124 learning environment.
Attempts to understand how humans make sense of their surroundings.	The aim of this study is to understand how the students made sense of their learning experiences.
The need to see and understand the world as it is the core of this paradigm.	The need to see and understand the Ekn 124 students as they were, are at the core of this research.

Table 10: The study within the Interpretivist Paradigm.

Given the two dimensions - the subjective-objective dimension and the regulation-radical change dimension, Burrell and Morgan's (1979, p. 22) paradigms are illustrated in Figure 6. This figure also positions this research within the matrix.

SOCIOLOGY OF RADICAL CHANGE			
SUBJECTIVE	Radical humanist	Radical structuralist	OBJECTIVE
	Interpretivist - Subjectivity of students' own experiences - Observation of students in action	Functionalist	
SOCIOLOGY OF REGULATION			

Figure 6: Placing the research within the four paradigms

(Burrell and Morgan, 1979, p.22)

After having placed the study in the interpretivist paradigm, the research strategy which was applicable to the subject had to be chosen.

3.4 Research Strategy

A research strategy is the broad plan of action of how one intends to go about answering the research questions one has asked (Saunders, Lewis and Thornhill, 2000, p. 98). There are several strategies that one use when doing social science research. The strategy chosen depends on three conditions: (a) the type of research question, (b) the control an investigator has over the actual behavioural events and (c) the focus on contemporary, as opposed to historical, events (Yin 2003, p. 1). In the case of this research, the question mainly focused on qualitative experiences. I had very little control over the way in which students would respond to the teaching

methodology employed, and the importance of current events was central to the outcomes.

Furthermore, I had the choice of using a qualitative, a quantitative or a mixed methodology of research. I wanted to determine the personal experiences of students and I also wanted to know to what extent there was consensus amongst the students. Researchers who use logical positivism or quantitative research employ experimental methods and quantitative measures to test hypothetical generalisations (Hoepfl, 1997), and they also emphasise the measurement and analysis of causal relationships between variables (Denzin and Lincoln, 1998). This was not my goal – I did not want to test causal relationships without knowing the “how” and “why”. Qualitative research uses a naturalistic approach that seeks to understand phenomena in context-specific settings, such as a “real world setting [where] the researcher does not attempt to manipulate the phenomenon of interest” (Patton, 2002, p. 39). Although a qualitative study would encapsulate the experiences of students, it would not be useful when I needed to generalise about the entire class. Thus, I have used a mixed methodology, which includes both qualitative and quantitative methods to gather data.

There are several ways of doing social science research. Yin (2003, p.1) states that case studies “...are the preferred strategy when ‘how’ or ‘why’ questions are being posted, when the investigator has little control over events and when the focus is on a contemporary phenomenon within some real-life context”. He goes on to quote Schramm when he says the following: “The essence of a case study, the central tendency among all types of case study, is that it tries to illuminate a decision or set of decisions: why they were taken, how they were implemented, and with what result.” It was therefore appropriate that the selected strategy for this research is a case study. The questions asked of the students, the questions asked in the study and the lack of control that I had over the students’ decisions, strengthened this decision.

Whilst Lincoln and Guba (1985, p. 360) state that “...there seems to be little agreement about what a case study is”, several authors have attempted descriptions. Gillham (2000, p.1) defines a case as follows:

- “a unit of human activity embedded in the real world;
- which can only be studied or understood in context;

- which exists in the here and now;
- that merges in with its context so that precise boundaries are difficult to draw.”

He then continues, “A case study is one which investigates the above to answer specific research questions”. After the Cambridge Conference on “Methods of case study in educational research and evaluation” held in 1975, two definitions of a case study came to the fore. The first, “The study of the instance in action”, was coined by Barry MacDonald and Rob Walker. The second was posited by Louise Smith, stating that a case study was the “Study of a bounded system” (Basse, 1999, p. 24). Miles and Huberman (1994, p. 26) define a case “... as a phenomenon of some sort occurring in a bounded context. The case is, in effect, your unit of analysis.”

The unit of research was a group of first-year Economics students making use of a mixed mode of teaching. It was the first time that these students had encountered this methodology of teaching. The size of the class was approximately 800. However, the number of students in the class did not pose a problem in this instance, since there seems to be no conclusiveness with regard to the size of a case. A case may be as small as an individual; it may be defined by role, or it may be as large as a nation. (Miles and Huberman, 1994, p. 26) The group of students was heterogeneous with regard to demographic characteristics, such as gender, race and age, but this could have added to the quality of research. A case study may also have sub-cases embedded within it, as explained by Yin (2003, p.14), which may have the added advantage of allowing the “...researcher an even deeper understanding of processes and outcomes of cases...” (Miles and Huberman, 1994, p. 26). However, for the purpose of this research, boundaries were set in that these demographic differences were not recorded (Miles and Huberman, 1994, p. 25).

Cohen and Manion (1991, p. 125) write the following on case studies:

“... the case study researcher typically observes the characteristics of an individual unit....The purpose of such observation is to probe deeply and to analyse intensively the multifarious phenomena that constitute the life cycle of the unit with a view to establishing generalisation about the wider population to which that unit belongs. “

The life cycle in this instance was the semester running from July to December 2004. The individual unit belongs to the wider population of the student body and

specifically involves the students in the Faculty of Economics and Management Sciences.

MacDonald and Walker, (as quoted in Bassey 1999, p. 24) compared case study research with the work of an artist, when they wrote the following:

Case-study is the way of the artist, who achieves greatness when, through the portrayal of a single instance locked in time and circumstance, he communicates enduring truths about the human condition.

In an attempt to define case studies, Walker (2002) describes the aims of a case study:

“... case study research is essentially concerned with providing credible representations of reality. Case studies aim to give the reader a sense of 'being there'; whether this means seeing a classroom through the eyes of a child, a school through the eyes of a teacher, or education through the eyes of a parent (or more often, all of the above)” (Walker 2002). Stenhouse states in this regard that “. . . the task of case study is to produce ordered reports of experience which invite judgment and offer evidence to which judgment can appeal.”

Table 11 is a summary of the literature as discussed above and links the key aspects/characteristics of a case study to the unit of analysis, the Ekn 124 English medium class (2004).

Literature	Author	Researched Case
human activity, real world	Gillham (2000)	Ekn 124 class
studied/understood context	Gillham (2000)	Observed throughout semester via WebCT
here and now;	Gillham (2000)	Observed throughout semester
boundaries difficult to draw.	Gillham (2000)	Only English speaking Ekn 124 students, not the only ones on campus
specific research questions	Gillham (2000)	See questions stated above
instance in action	Merriam (1988)	Observed throughout

		semester
bounded system	Creswell (1998)	Only English speaking Ekn 124 students
Size: one, small, big	Miles and Huberman (1994)	Entire group observed
sub cases	Yin (2003)	Not applicable
'how' or 'why' questions	Yin (2003)	See research questions
little control	Yin (2003)	Linked to students' personal experiences
contemporary phenomenon	Yin (2003)	Blended learning
real-life context	Yin (2003)	Observed throughout semester
Illuminates a decision	Yin (2003)	Why use an LMS?
observes the characteristics	Cohen and Manion (1991)	'How' and 'why' experiences
communicates truths: human condition	Walker (2002)	Experiences reported on
credible representations of reality	Walker (2002)	Observed throughout semester
ordered reports of experience	Stenhouse (1985)	Observed throughout semester
unit of analysis	Miles and Huberman (1994)	Entire class analysed
Multiple data collection methods	Yin (2003)	See table 3.4

Table 11: Linking characteristics of a case study to this research

In essence, the primary defining features of a case study is the fact that there is a multiplicity of perspectives rooted within a specific context (Snape and Spencer, 2003, p. 52). In the context of this research, then, the multiplicity of perspectives lie in the fact that each individual role player may have experienced the use of a Learning Management System in a different way. This case study aims to give the reader a sense of having experienced Ekn 124 through the eyes of the first-year students, the tutors and the lecturer involved. In order to do this, several different instruments were used to gather data.

3.5 Instruments, Data collection methods and Fieldwork practices

3.5.1 Data collection

Data were collected by means of questionnaires, focus group interviews, literature reviews and observation. This is in accordance with Bassegy (1999) who identified three fundamental types of data collection methods: “Asking questions (and listening intently to the answers), observing events (and noting carefully what happens) and reading documents”. In this study, all three methods were used: questions were asked (through questionnaires and discussions); students were observed (in the discussion area) and documents were read (in terms of investigating other researchers’ works.) In order to gather rich and detailed descriptions of students’ experiences, more than one method of data collection was used. This allowed me to listen carefully to the nuances of the students when they spoke about their experiences (in the focus groups), but also to assess the opinions of a large number of students (paper based questionnaires) and to allow for one set of instruments to verify or refute the other (Fidel 1993 as quoted in Olson). Bassegy (1999, p. 62) calls this “eclectic” when he states that there is no unique method of collecting the data, but “...is eclectic and in preparing a case study researchers use whatever methods seem to them to be appropriate and practical”. Hence, “multiple methods of data gathering” were employed (Olson).

3.5.2 Triangulation

Much has been written about triangulation in research and the need to use multiple methods of data collection in order to protect the researcher against bias. “Triangulation in social research is the combination of different methods, methodological perspectives or theoretical viewpoints...proponents of ‘triangulated’ approaches to research assert that the result of combining varied approaches is a net gain – the strengths of each contrasting approach more than cancel the weaknesses of their counterpart” (Miller and Brewer, 2003, p. 326). Patton (2002, p. 41) advocates the use of triangulation (and thus multiple methods of measuring data) by stating that “ ...triangulation strengthens a study by combining methods. This may mean using several kinds of methods or data, including using both quantitative and

qualitative approaches to research. Triangulation is typically a strategy (test) for improving the validity and reliability of research or evaluation of findings“.Eisner (1991, p. 110) used the term ‘structural corroboration’ – a means through which multiple types of data are related to each other to support or contradict the interpretation and evaluation of a state of affairs’ (as quoted by Woods, 1999, p. 5). However, although many researchers support the notion of triangulation and insist on its use, there are several social scientists “...who do not believe that *true triangulation is really possible*” (Miller and Brewer, 2003, p. 329, own emphasis).

The argument is that the triangulation approaches sit within a framework where the researcher is supreme and, even if there is some objectivity involved, the text and the writer are still interdependent. What we as readers know, we only find out because of the writer, and there cannot be only one truth, or one explanation. There are several overlapping truths and these are constantly changing. Consequently, the term ‘crystallisation’ is a much more useful validating concept than triangulation. (Woods, 1999, p. 5) According to Richardson, (1994, p. 522) triangulation is “rigid, fixed, two-dimensional”, while crystallisation is three-dimensional. Triangulation assumes that there are three sides (a triangle) to view the world, while a crystal has multiple sides and “...depends upon our angle of repose” (p. 358). This research uses multiple methods of data collection in order to triangulate, but the crystallisation is grounded in the fact that the reader will view the data and each reader will create a different perception of the reality, depending on each one’s angle.

3.5.3 Methodology

I had a choice of using qualitative, quantitative or a mixture of methods. “Knowing what you want to find out leads inexorably to the question of how you will get that information” (Miles and Huberman, 1994, p. 42). I wanted to find out how certain aspects of the course were encountered by the students, and I also needed to know to what extent there was agreement (or not) amongst the members of the class. The methods used by qualitative researchers epitomise the belief that they may provide a “...deeper understanding of social phenomena that would be obtained from purely quantitative data” (Silverman, 2000, p. 89).

In this study, I used a mixed methodology: both qualitative, as well as quantitative data collection methods and analyses. Blaikie (2003, p. 47) maintains that “...quantitative methods are used when the data have been collected in, or are soon converted into, numbers for analysis, while qualitative methods are used when data are in words and remain in words throughout the analysis”.

Proponents of this mixed methodology highlight the fact that the disadvantages of the one method is compensated for by the advantages of the other. This can be illustrated in Table 12 below:

Qualitative Research: Advantages	Quantitative research: Disadvantages
Holistic, detailed	Limited Scope
Reactivity	
Naturalism	Artificiality
Qualitative Research: Disadvantages	Quantitative research: Advantages
Non-representative	Representativeness
	Possibility of impartial disproof
Lack of bias control	Control (rigour)

Table 12: Qualitative vs. Quantitative research

(Adapted from Miller and Brewer, 2003, p. 327)

The qualitative instruments were concerned with the experiences and the impressions that the students have of the use of a blended learning system, whilst the quantitative methodology concerns issues where the students were asked to rank the different tools of the LMS.

The questionnaires which were used at three different points in the intervention were unstructured and semi-structured. Gillham (2000, p. 60) uses a table (see Figure 7) to illustrate the different dimensions of the questionnaires. Although questionnaires are not usually used in case study, they are classified by Gillham as the “...most structured end of the continuum.” (2000, p. 59).

Unstructured				Structured		
Listening to other people's conversations	Using 'natural' conversations to ask research questions	'Open-ended' interviews with a few key open questions	Semi-structured interviews i.e. open and closed questions	Recording schedules, in effect, verbally administered questionnaires	Semi-structured Questionnaires: multiple choice and open questions	Structured questionnaires: simple, specific, closed questions

Figure 7: Research instruments within the structured/unstructured continuum.

The instruments in this research were, therefore, a combination of unstructured (focus group discussions, observations), semi-structured (questionnaires) and structured (closed-questioned questionnaires). The data collection instruments, the dates of data collection and the persons responsible for administrating these instruments, are summarised in the following table:

Instrument	Target	By Whom	When
Focus group discussions	Tutors	Researcher and observer 1	18 August 2004
	Tutors	Researcher and observer 2	21 September 2004
	Group 2	Observer 2	17 November 2004
Questionnaire 1: Semi-structured	All students of case	Researcher	2 August 2004
Questionnaire 2: Unstructured	All students of case	Researcher	20 September 2004
Questionnaire 3: Semi-structured	All students of case	Researcher	25 October 2004
Course Evaluation: Semi-structured	All students of case	Programme Director	28 and 29 October
Observations: Academic Discussion forums (online)	Group 2	Researcher	Throughout Second semester
Observations: Informal Discussion forums (online)	Group 2	Researcher	Throughout Second semester

Table 13: Data collection instruments, target groups and dates.

Each instrument and its applicability to the research study will be discussed in the following section.

3.5.4 Focus Group discussions

Three focus group meetings were held – two with tutors and one with students (Table 3.4). Participants in Group 2 were all registered Economics 124 students (English medium) at the UFS who belonged to subgroup 2. The other focus group discussion consisted of all the tutors who participated in this unit of analysis. The tutors, as well as members of Group 2, were familiar with one another – either through their activities as tutors, or through their interaction in the discussion forum throughout the semester. All these participants had experienced the blended model and its applications. They were in a position to share their experiences with one another, as well as with the convener. By encouraging them to share these experiences, a much richer source of data was obtained than from just the questionnaires.

A focus group as a data collection instrument is a group discussion that gathers together people from similar backgrounds or experiences to discuss a specific topic of interest to the researcher (Dawson and Manderson 1994). Words such as organised discussion collective activity, social events and interaction distinguish focus groups from other types of interviews (Gibbs, 1997).

The main purpose of focus group research is to draw upon respondents' attitudes, feelings, beliefs, experiences and reactions in a way which would not be feasible using other methods; for example observation, one-to-one interviewing, or questionnaire surveys (Gibbs 1997). For this study, it was essential that the thoughts and honest opinions of the students towards the online method of instruction were gauged, and that enough detailed information was collected. Thus, the focus groups were ideal, since in a focus group discussion, the participants will give their own opinions, but also listen to what others have to say and elaborate on particular issues, thus deepening and refining points of view (Finch and Lewis, 2003, p. 171).

Focus groups are also "focused" because the participants usually share common characteristics. These may be age, sex, educational background, religion, or something directly related to the topic (Dawson and Manderson, 1994). The tutors were all of similar age with similar qualifications. Although the members of Group 2 were diverse in terms of age, gender and race, they had one thing in common – the desire to pass Ekn 124.

Because the study was ongoing for the period of a semester, and the data collection process was developmental in character, results from one questionnaire or focus group was used as the basis for the next data collection. Data were therefore collected at different stages of the study. This is supported by Gibbs (1997) who asserts that focus groups may be used at the preliminary or exploratory stages of a study; during a study, perhaps to evaluate or develop a particular programme of activities; or after a programme has been completed, to assess its impact or to generate further avenues of research. They may be used either as a method in their own right or as a complement to other methods, especially for triangulation and validity checking.

The tutors met for two focus group meetings – one at an early stage of the study and one at a later stage. They were able to assess more accurately their experiences in relation to their expectations at the later meeting. The reason why the interviews were held with the tutors were two-fold: Firstly, when they were first-year students, they were taught in the traditional way (only face-to-face lectures and paper-based tutorials) and were therefore in a position to compare their own learning experiences as first-years with the blended method. Secondly, they were the case group's first line of communication, and it was felt that they would present a different understanding, insight and interpretation of the experiences of the first-years. With each focus group meeting of the tutors, an independent observer, as well as the researcher, was present.

The students met only once, right at the end of the semester. Most studies bring the focus group together for one session (Garson, 2005, Lewis 2003). All thirty-two members of this group were invited. Each person was sent two personal emails and an invitation was placed on WebCT announcements. Figure 8 illustrates the screenshot of the latter, which is similar to the emails.

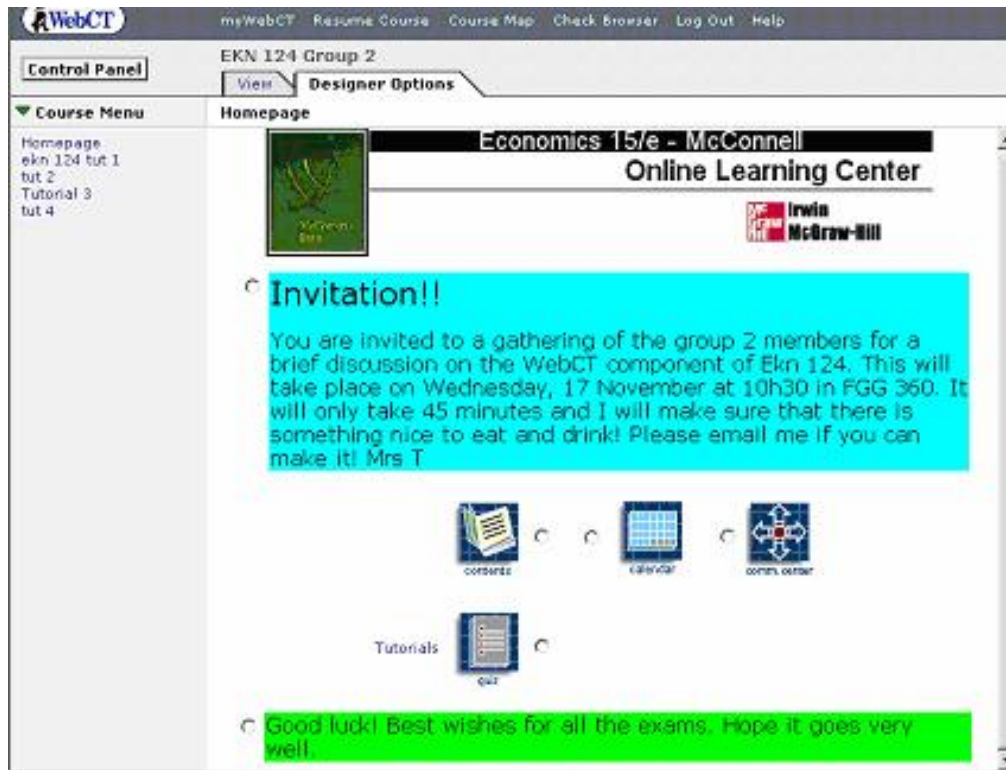


Figure 8: Invitation to the focus group meeting of the students in Group 2.

In the end, eight students attended this meeting. An independent observer, who, at that stage, was employed at the e-learning department of the UFS, ran this focus group meeting. I was not present, so that it would allow the participants to speak freely.

There were 10 tutors and 32 members in Group 2. In terms of group size, some authors recommend a focus group size of 6 -8, though examples can be found of both smaller and larger groups, and this can depend on several issues, such as the sensitivity or complexity of the population involved and the extent to which the researcher needs breadth or depth of data (Lewis, 2003, pp. 192 - 193). Focus group facilitators, however, usually regard even 10 as unwieldy and counterproductive. All students of Group 2 and all tutors were invited to the focus group meetings but none of these meetings exceeded eight.

In this study, the tutors were brought together for two sessions, because I wanted to find out if and how students' attitudes and experiences of the blended system changed after becoming used to the technological challenges. The first-years were brought together for one session at the end of the semester. They had already filled

in three questionnaires and a course evaluation form, thus the focus group meeting was held to clarify and elucidate any information that was gained from these instruments.

3.5.5 Structured and Semi-structured Questionnaires

Very little is available in the literature on qualitative research, and specifically in case study research, on the use of questionnaires. This could possibly be since questionnaires are seen as quantitative and not qualitative data collection instruments. Gillham (2000, p. 78) goes as far as to state that these "...usually has a minor place in case studies (if they are used at all)". Furthermore, they "...are of little use if meaning and understanding are primary concerns – but they have their niche in case studies" (own emphasis). In this specific case, I wanted as much information from as many students as possible. The more information, the better I could understand the way in which the students experienced the learning intervention. Gillham (2000, p. 78) explicitly states that questionnaires "...have some value in case studies as a way of getting straightforward, fairly accurate information."

The other advantage of using an unstructured or semi-structured questionnaire is in line with Mintzberg's (1973) advantages of 'structured observations' namely, that it is "...a method that couples the flexibility of open-ended observations with the discipline of seeking certain types of structured data. ...Each observed event...is categorized by the researcher in a number of ways...The categories are developed during the observations and after it takes place (own emphasis)".

The areas to be included in this study were explored for a period of 18 months prior to the start of the actual research. The questionnaires were designed and developed together with colleagues from the Department of Economics and the e-learning department at the UFS. All questionnaires were piloted and tested before being implemented. The design of the questionnaires thus followed the three stages according to Wilson (1985, p. 66).

- 1 Exploration of the areas to included
- 2 Question wording and sequencing
- 3 Physical design layout.

In this study, questionnaires for the first-year students were used three times during the course of the semester. All three were completed at the beginning of a lecture period. I felt that the return would be higher if these were handed out and completed during class, and if there were any uncertainties, I would be present to answer questions. The main criticism against the use of questionnaires is the fact that they may lack validity. Respondents may interpret the questions in a different way from what was intended, especially when ranked responses are asked for. Furthermore, respondents may not be totally honest in their answers (Miller and Brewer, 2003, p. 255). In order to overcome this, I was present during the completion of all the questionnaires, and the questionnaires were tested beforehand on a sample group.

The first questionnaire, which was completed on 2 August 2004, was semi-structured. The first section focused on demographic issues, such as age, gender, and questions about computer skills, access to computers and training needs. This gave a more comprehensive picture of the target group. The last three questions of this questionnaire were directed towards the initial impressions of students and meant to gauge the general attitude of the students towards WebCT (see appendix 3). In total, 378 students out of a possible registered 648 filled in this questionnaire, which translates into a 58% return.

The second questionnaire was completed on 20 September 2004 and was an unstructured questionnaire. In this questionnaire which was completed 6 weeks after questionnaire 1, i.e. 2 months after the start of the intervention, students were asked their opinion about using a Learning Management System as part of a course, and to give their advice to an imagined lecturer who was also interested in making use of the blended teaching and learning model. They had to tell the lecturer what to include in the course and what they personally gained from the experience. As was the case with questionnaire one, this was also done during the first part of a lecture. The following question was written on an overhead transparency and read to the class:

If you were to give advice to another lecturer who wants to use the blended learning model, what would you say? What should this person include? What should be left out? What is the value of WebCT to you?

The students were given a blank sheet of paper on which to write their answers. Two hundred and twenty-two questionnaires (34% of the total group) were completed. A possible reason for this low return (in comparison to the first questionnaire) is that the university holidays started on 23 September and many students may have decided to miss the last week of term.

The last questionnaire of 25 October was the most structured of all the questionnaires. (See appendix 4). All the questions were designed as “closed” questions where response alternatives were used, and then there was a follow-up question that was “open”. Students were asked to rate the specific tools from WebCT which were used in the course. Ratings were from between 1 and 5, where 1 indicated ‘totally useless’ and 5 ‘very useful’. Initially, ‘ineffective’ and ‘effective’ were the choice of words, but after pilot testing and informal discussions with students and tutors, ‘useless’ and ‘useful’ were chosen, since these words reflect the everyday student language more effectively. Three hundred and fourteen students completed this questionnaire, which translates into 48,5% of the population.

In all three of the questionnaires, students were invited to use the back of the paper, which was left blank, to add further comments or issues which they might have wanted to raise. All the answers/comments were transcribed by myself.

3.5.6 Course evaluation

At the end of each semester at UFS, course evaluations are done by the different programme directors who, without the lecturer present, attend the first few minutes of a lecture and ask students to complete course evaluations. The aim of this evaluation is to give feedback to academic staff on how students experienced the course in terms of the course itself and in terms of the competence of the lecturer. The aim is to give the lecturer an idea of areas where they are successful, but also to identify areas that need improvement. Together with other evaluations (such as peer evaluation), this will form part of the achievement-evaluation system at the UFS (Liesl Massyn, personal e-mail, 10 February 2005).

There are two main sections in this evaluation. The first section consists of closed questions with grading scales between 1 and 5 and focuses on three areas:

- The Course;
- The Lecturer;
- General.

The second section consists of three open-ended questions:

1. Which aspects of the course were most beneficial to you?
2. What do you suggest to improve this course?
3. Other remarks.

On 28 and 29 October 2004, the course evaluation for Ekn 124 was done. At the initial planning of this research, this evaluation form was not factored in as a data collection instrument. However, as I scrutinised the evaluations, the following emerged:

- 239 students completed the course evaluation
- 69% (164) of the students answered the open-ended questions.
- Of the 164, only 43 (18% of the total) did not mention WebCT
- More than half of those who completed the course evaluations indicated that WebCT somehow influenced their learning experiences in this course.

It was imperative that the results from the course evaluation be included in this study. I once again transcribed all comments. These will be discussed in Chapter 4.

3.5.7 Online Participant Observation

In this study, online observations took place on two different levels. Group 2s contributions in the academic discussion forums were recorded and analysed. This was the more formal discussion forum. The social discussion forum (chill café) where students discussed general, non-academic issues was also analysed. All together, there were 504 messages for Group 2, spread over a period of 10 active weeks. All these messages were read and, where applicable, included in the analysis.

Banister et al (1994, p. 19) state that with observation, there is the commitment to try to understand the world better, usually from the standpoint of individual participants. Thus, with these online observations, the aim was to understand the 'real' students in

their learning environment. By observing from the outside what the students wrote and how they reacted to comments from their tutors and their peers, I could form a better insight into their understanding of the course content and topics. Macqueen and Knussen (1999, p. 233) suggest that observation may be used, amongst others, to:

- Establish what actually happened in various settings
- Illuminate findings or examine situations more closely
- Evaluate the impact of interventions.

By reading comments in the academic discussions, I could form an opinion of the added value that these discussions had for the learning experiences of the students and this assisted me when analysing the focus groups and questionnaires. The informal discussion (chill café) gave me an insight into the enjoyment that students had in using CIE for social purposes.

Silverman (2000, p. 90) claims that observations take place over an extended period of time and attributes the understanding of the 'subculture' as one of the claims of using observations. He states further that "... observation is not generally seen as a very important method of data collection in quantitative research. This is because it is difficult to conduct observational studies on large samples." He goes on to say that some qualitative researchers find observations as not very reliable, because of the fact that different people experience what they see in a different way. However, observation has been used as the method of choice in many qualitative studies, especially when understanding another culture is important (Silverman, 2000, p. 89).

3.6 Sample design and sampling methods

For this research project, the Economics first-year, second semester English medium class at the UFS was selected. The class consisted of an almost equal number of males and females. The majority of the students were Sesotho speaking, with English as their second or third language.

Blaikie (2003, p. 165 – 166) maintains that "...the accuracy of estimates of population parameters depends on the sample size. For this reason, the general rule of samples is the bigger the better." Since the factors that are normally cited as problems with

regard to sample size (such as costs), were not applicable to this study, for the purposes of the questionnaires and the course evaluations, all members of the population were included.

I selected this group from the target population by means of stratified sampling. “Stratified sampling is a commonly used probability method that is superior to random sampling because it reduces sampling error. A stratum is a subset of the population that shares at least one common characteristic. Stratified sampling is often used when one or more of the strata in the population have a low incidence relative to the other strata” (Walonick, 1997).

For the purposes of the online participant observation and the focus group meeting, only one group, namely Group 2 was selected. Initially, the class was divided into groups in a random manner. However, I then had to select a group as the sample group, which I was to observe closely, as well as initiating a focus group discussion. The group that was most representative of all the different demographic characteristics (strata) of the Ekn 124 class was selected. These strata include:

- All races (White, Black, Coloured, Asian)
- Full-time as well as part-time students
- Male as well as female
- Good achievers (more than 75% for Economics in the first semester)
- Average achievers (between 50 – 74%)
- Failures
- Access to internet facilities at place of residence
- Different levels of Computer skills

Schatzman’s method of selective sampling (as quoted by Strauss, 1987, p. 39), which refers to the “...calculated decision to sample a specific type of interviewee according to a preconceived but reasonable initial set of dimensions which are worked out in advance for a study” was used to select Group 2, as it represented all the different categories/dimensions mentioned above.

3.7 Data capturing and data editing

All the focus group meetings were recorded on a dictaphone. After each meeting, I captured the data on computer and sent them to the observers who attended the meetings in order to vouch for accuracy and to minimise error. The “open” questions in each questionnaire were typed according to each group, and then a composite set of answers for each questionnaire was made. The “closed” questions were sent to the computer services section of the UFS for statistical analysis. The comments made by Group 2 on the academic discussion forums, as well as the ‘chill café’ comments were saved at the end of the semester. I made general notes on informal discussions and comments throughout the semester.

I felt that it was imperative for me, as the researcher, to get intimately involved with the data and immerse myself in the data. A more intimate understanding of what students think about an issue is obtained, when the observer is actually present. A pause, an affirmative comment in the background, students laughing at comments, also tells a story that is important to hear. I thus decided to transcribe the tapes and questionnaires personally. Mostyn believes that “... most qualitative researchers agree that there is definite value in listening to the tape recordings in addition to reading the transcripts, since the nuances of feeling, tone of voice, pauses and so forth become evident” (Mostyn, 1985, p.136). By doing the data transcriptions as the data were collected throughout the semester, I gained an indication of the foci of the next questions. Reading and listening to the conversations was also the starting point of the data collection process, since I could immediately start with open (unrestricted) coding – the initial type of coding, which allows the researcher to produce provisional concepts (Strauss 1987, p. 28).

3.7.1 Data/content analysis

The fact that the questionnaires were open-ended or unstructured, allowed the students to share as much or as little as they wished about their experiences in the LMS, the effect of it on their learning process and the effect of sharing with others in groups. A large amount of data was collected and had to be analysed and interpreted. Qualitative content analysis is the tool used by qualitative researchers when they are “...faced with a mass of open-ended material to make sense of. The

overall purpose of the content analysis approach is to identify specific characteristics of communications systematically and objectively in order to convert the raw material into scientific data” (Mostyn, 1985, p.117). For this reason, I analysed the data on a continual basis.

Creswell's (1998) procedure lists five steps to data analyses and reporting.

1 Organisation of data.

I listened to the tapes several times and transcribed them. These transcripts were then sent back to the two independent observers to confirm accuracy. They agreed that the transcribed versions were, indeed, an accurate version of the conversations. I also typed the responses from all the questionnaires. As the data were read and re-read, three core categories emerged. The general theme of the core categories is as follows:

- Lecturer/facilitator related;
- Peer related
- Content related

“Content analysis stands or falls by its categories” (Berelson, 1952, p. 147). The next step was to categorise the data and to identify themes - one of the most fundamental, but also one of the most mysterious tasks in qualitative research (Ryan and Bernard, 2003). It was imperative that this section of the research was done accurately and all possible categories were included.

2 Categorisation of data.

Once the core categories were decided upon, I used colours to identify the data that belonged to each category – concepts that referred to the lecturer were coded in red, those referring to peers were yellow and content related issues were highlighted in green. This tool is called a literal tool where a concrete physical apparatus (in this case, highlighting on the computer) is used (Lee and Fielding 2004, p. 530). The colours thus served as a coding system and the data were coded accordingly. Data were then sorted and stored according to colours. The different categories and subcategories that emerged will be discussed and analysed in Chapter 4.

3 Interpretation of the data.

The statements that fell into comparable themes or codes were then examined to see if they had specific meaning in relationship to the purpose of the study. These statements will also be discussed in Chapter 4.

4 Identification of patterns.

I then read the data and the statements made by the students within the context of the categories and looked for patterns and topics which allowed me to draw conclusions. The conclusions are discussed in Chapter 5.

5 Synthesis.

The final step in the data analysis and interpretation is to give an overall representation of all the responses and to conclude the study by making recommendations, based on the insight gained into the data. This will also be discussed in Chapter 5.

3.8 Shortcomings and sources of error

Validity (the accuracy or truthfulness of a measurement) and reliability (the possibility of replicating the study) (Walonick, 1997) are often seen as problematic within qualitative research. As is the case with this particular study, the problem stems from the fact that the research material (in this case the students), is subjective and the majority of projects (the Ekn 124 class, 2004) are of a once-off nature (Mostyn, 1985, p. 117). There is agreement on the “impossibility of absolute objectivity” (Hardy and Bryman, 2004, p. 543). I am aware of the fact that I, since I was very involved with the students in the study, this could cloud my interpretation of the data. Nevertheless, I made every effort to ensure the maximum degree of objectivity within the scope of the study. I am of the opinion that the number of questionnaires handed out, the large number of respondents, and the fact that I made use of several data collection instruments verify my results.

The following were done:

Crystallisation: Multiple methods of data collection, including several questionnaires, discussions and observations, were used.

Member checks (focus group meetings): After each focus group meeting, the transcribed discussions were sent to the observers for checking. Observers agreed that the transcriptions were in line with what had been discussed.

Peer reviews (analysis and interpretation): After the analysis was done (as discussed in Chapter 4), it was sent to the observers (see focus group meetings), as well as to colleagues to test for accuracy of interpretation.

3.9 Conclusion

This interpretivist study (Burrell and Morgan, 1979) of a group of Ekn 124 students focused on their learning experiences whilst making use of different tools in an LMS. The study was done in the form of a case study (see Table 11) where the case was the 2004 Economics second semester class, studying at the UFS. The boundaries of this case (Gillham 2000, p.1) are the fact that all the members of the case study attended the English medium of instruction class. This class has traditionally been offered in a face-to-face manner only. The study investigated the responses of the students after a component was added to the course which changed the mode of instruction to a blended model. The following components were added electronically:

- A-synchronous discussions
- Multiple choice quizzes
- Notes
- Additional material
- Announcements
- My Grades

Data were collected throughout the semester by means of focus group meetings, semi-structured and unstructured questionnaires, course evaluations, and observations.

Chapter 4 reports on the findings from the data collection and analysis.