A SYSTEMIC ANALYSIS OF POSTGRADUATE STUDENTS' EXPERIENCES OF COMPUTER MEDIATED COMMUNICATION IN A WEB-BASED LEARNING ENVIRONMENT

BY

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God Bless and peace be with you all, always!

The Epistemic Screw

Can we not be, much more
than planetary sleuths
probing life's own investigation,
itself, a vision quest through knowing
being-and-doing in random historical drift
forsooth, this search for a reasonable quest
(with our private eyes and communal ties)
for a fitting object of our affections…

Indeed, does not this screw of knowledge
turn on a horizontal axis?
a roller coaster ride
from chicken to egg
through countless generations…

our exploration parties grope
through progressively abstract
levels of logical type
through ageless labyrinths
of contradictions and paradox
nested in hierarchies of context
perceived difference, domains of distinction…
and incessantly shifting sands
of linguistically determined
communal agreement.

- Ranulph Glanville

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ABSTRACT

The purpose of this study is to describe and offer a description of postgraduate students' experiences of computer-mediated communication in an interactive web-based learning environment. This is relevant to the South African context regarding its appropriateness and feasibility as a distance-learning medium.

In this research study the collaboration of offline and online learning as a dual medium is briefly looked at. Concepts involved in web interactions, such as computer-mediated communication, are reviewed and some of these experiences are described. A systems qualitative analysis was employed in the research design, and consequently a systemic lens was utilised as the theoretical perspective. This lens allowed for a revealing of interactional and communication patterns involved in web-based learning environments.

The findings in this research study are discussed and some recommendations for web learners and course presenters are briefly highlighted.

KEY WORDS:

Web-based learning; Web-based instruction (WBI); Computer-mediated communication (CMC); E-mail; Systemic analysis; Qualitative research

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CHAPTER 1: THESIS AT A GLANCE

> *"The Web is both a product of agents of change, and an agent of change in itself. And like the components that make up the Web, the Web itself is a component in a broader socio-technological network whose form and meaning both shapes, and is shaped by the Web. Most broadly, it is an inextricably intertwined part of a rapidly changing world system of intermeshed social relationships and technological components." (Falk, 1995).*

1.1 Introduction

Chapter one forms the outline of this thesis. The rationale for embarking on this exploration and an introduction of the various facets involved in this journey is revealed.

1.2 The topic

This research is focussed on the study of postgraduate students' experiences in an interactive web-based learning environment. This research was initially inspired by the researcher's own experience in a web-based learning environment.

Consequently a quest for insight into how others experienced this environment was borne through the engagement in this learning process.

1.3. Motivation for the study

Web-based tuition was introduced into the South African education spectrum during the late 1990s. Web-based instruction (WBI) has been described by Khan (1997) as, a hypermedia-based instructional program that utilises the features and resources of the World Wide Web (WWW) in order to create a meaningful learning environment wherein learning is both fostered and supported.

Web-based instruction was first initiated at a tertiary level in South Africa. A few years later (during 1999), it was introduced at scholastic level, through the launch of the "SchoolNetSA" project. Web-based instruction has greatly transformed the manner in which, we in South Africa, perceive, interpret and experience distance learning. This is attributed to the ability of web-based learning to bridge physical distances thereby facilitating accessibility to various courses and study programs to a larger spectrum of potential learners. Distance learning in this context is described as education/training that occurs when lecturer/teacher and learner are not in the exact same space (location) at the exact same time (Cronjé, 1997).

The use of this medium as facilitator of various learning programs necessitates a further understanding and interpretation of web-based instruction's impact on the learning and communication process. In order to ascertain this, further exploration and understanding as to how this virtual frontier, the virtual environment of cyberspace, is experienced by South African students, is required.

The virtual environment in this World Wide Web ushers forth a computer-mediated communication process. Thus, it also becomes important to ascertain the mechanics involved in this communication process and how it is experienced in a virtual learning environment. These aspects mentioned are vital in exploring the impact of web-based instruction (WBI) as a dynamic, interactive distance-learning medium.

As the technological advancements in education, including distance learning, continue to grow and diversify, web-based learning environments, continue to increase the reach of education, especially at tertiary level in South Africa. It is envisaged that through this study, a better understanding of the virtual environment and web-based instruction can be gained, so that potential further research avenues in it's use and application in the South African learning arena can be understood, and recommendations can thereby be made for future web-learners, in terms of what this technology (medium or classroom) entails.

This research endeavour focussed on the postgraduate students in the psychology department at the University of Pretoria. The Research Psychology Master's Degree programme at the University of Pretoria embarked on the first web-based class during 1998. This programme continues to primarily utilise web-based instruction. Instruction on this course is not solely web-based – there are a number of face-to-face workshops and practical sessions held.

This course was not the first to opt for this route of instruction, i.e. web-based learning. Online (web) classrooms were researched and pioneered at the University of Pretoria by Prof. J.C. Cronjé. After a pilot study in 1996, a computer-mediated

course was presented to the students studying the Computer-Assisted Education Master's Degree course. This course served to understand the differences and similarities between the two types of learning environments (Clark & Cronjé, 1997). Students engaged in the web-course (virtual classroom) by constructing their own websites in response to the various objectives of their specific course. Clark & Cronjé (1997) established that the events of an offline classroom could be replicated in a web-classroom with what they termed 'good pedagogic effect'. Online courses continue to be researched and developed at the University by this team.

Although this study was concentrated on the Department of Psychology's postgraduate students, additional future research can and should seek to include other departments and students (i.e. undergraduate and postgraduate). This can be done so as to ascertain a multidisciplinary perspective of web-based learning environments. In this way all facets entailed in this learning environment and process can be understood, e.g. technological skills required, changes in social world and learning process, types of instructional material that are appropriate, etc.

Based on preliminary data collection in informal discussions with instructors involved in this web-based learning course and from the literature surveyed both online and offline, it is apparent that there is a paucity of applicable data relevant to the psychological aspects of web-based learning environments. This is especially so, as regards the South African context. Most studies have focused on educational and design perspectives of web-based learning. It is anticipated that this study may serve to narrow that gap, and serve as a stepping-stone for further psychological research in this area.

Through this research recommendations could be construed for both learners and instructors intending on pursuing this medium of instruction. Potential learners would thereby have an increased awareness of the potential impact that web-based tuition and the phenomenon of the virtual environment have on students and its implications for learning via this medium.

Being an exploratory study, this research aims to highlight experiences of postgraduate students in the interactive web-based learning environment. It is envisaged that through this study potential avenues (areas) for further studies may be uncovered.

1.4. Research objectives

- To ascertain and investigate what the experiences of students who encounter this virtual medium in the form of web-based instruction are.

- To explore and offer a description of these experiences.

1.5. Layout of the study

Chapter two sets the scene for understanding the web-based learning environment and the communication processes entailed therein. Web-based learning and its role in distance education is briefly looked at. This chapter highlights the advantages and disadvantages of computer-mediated communication and also that of web-based learning/ instruction.

Chapter three introduces us to the theoretical lens that is employed in this study. The reader is introduced to the world of systems thinking and to some of the concepts entailed in this approach.

The research map for the overall study is discussed in Chapter four. This chapter highlights the research methodology, systems qualitative analysis, which is utilised in this exploratory study. The research design is also outlined in this section.

Chapter five details the exploration process. In this chapter the results and basic findings of the research study are revealed and discussed.

Chapter six concludes and reviews the journey embarked upon in this research study and offers the researcher's perspective on the process and perceived role of interactive web-based instruction and learning.

CHAPTER TWO: SETTING THE SCENE - LITERATURE REVIEW

"Welcome to the 21st Century. You are a Netizen (a Net Citizen, and you exist as a citizen of the world thanks to the global connectivity that the Net makes possible. You consider everyone as your compatriot. You physically live in one country but you are in contact with much of the world via the global computer network. Virtually, you live next door to every other single Netizen in the world. Geographical separation is replaced by existence in the same virtual space."

(Hauben & Hauben, 1997, p. 5)

2.1. Introduction

This dissertation entails the exploration of computer-mediated communication in a web-based learning environment. In order to promote adequate exploration of this environment and to understand the context and intricacies of this environment, an immersion into existing literature transpired.

A brief overview of both the traditional face-to-face classroom and the web-based classroom is provided – thereby affording a picture of differentiation between the two learning media. Thereafter, a more detailed description and identification of web-based learning sets the context within which the research will be conducted. This chapter also briefly looks at how distance learning finds it's footing.

Exploration of the communication style engaged in this process forms the second facet of this chapter and this journey then charts a brief course through the social world of the virtual environment and the understanding of the concepts of cyberspace and cyber-time.

2.2. From the Offline classroom to the Online classroom: Face-to-face learning versus Web-based learning

2.2.1. The Offline classroom

The traditional face-to-face type classroom setting involves the physical presence of a lecturer/teacher and learners at a specific location, at a specific time. Lessons are taught and learners have the opportunity to ask questions and in most cases obtain instantaneous feedback and answers.

2.2.2. The Online classroom

The online or web-classroom does involve the presence of lecturer or student – but not always at specific times. There are times when there is a specific online class taking place at a specific time, and there is also a specific location. However, in this scenario the specific location is a particular website or chat-room. Learners can access this 'classroom' from any location, and are still able to pose questions and comments to both the lecturer and other learners. When there is a chat-room situation, almost instantaneous feedback can be obtained, and when this is not the case (e.g. during the use of list servers and e-mail) feedback can take between a few hours or a day (or even two).

2.3. Web-based instruction

Web-based education is a type of distance learning that is made possible through computers, the World Wide Web (WWW) and the Internet (Kilby, 1997). As mentioned earlier, web-based instruction (WBI) is described as a hypermedia-based instructional program that uses the attributes and resources of the WWW to create a meaningful learning environment wherein learning is fostered and supported (Kahn, 1997). This telecommunication infrastructure, mediated by computers, allows for a more interactive and integrated learning environment (Berger & Collins, 2000). Interactivity between both lecturer-and-learner and learner-and-learner occurs.

2.3.1. The Internet

The Internet began as a communication network controlled by the US Government. Today, it is a free and open international information superhighway. The Internet is regarded as a worldwide network of permanently open telecommunications lines that link databases (Hegener, 1996). It is essentially a gigantic network of small and large computer networks that can be utilised by millions of people anywhere, and also at anytime (Scholtz & Steyn, 1998) and it is also a medium that brings people together (Hauben & Hauben, 1997).

The Internet has drastically changed the computer and communications world. The invention of the telegraph, telephone, radio, and computer has set the stage for this integration of capabilities (Hauben & Hauben, 1997). It is simultaneously a global broadcasting capability, a mechanism for information dissemination, and a medium for collaboration and interaction between individuals and their computers regardless

of geographic location (Leiner, Cerf, Clark, Khan, Lynch, Postel, Roberts & Wolff, 1998).

The Internet has succeeded in bridging physical distance between individuals and affording access to various resources in different media formats (e.g. audio, video, etc.). Communication has evolved, especially asynchronous communication, from the day of the hand-written letter sent physically via the post service – to the hand-typed e-mail posted electronically. The latter process affords an accelerated response than the former.

Throughout human history there have been divisions that were based on both social and economical status (Lebow, 1995). The introduction of technology has added another division to human society - based on technical sophistication, knowledge and aptitude. Computer literacy is essential in affording individuals access to the medium of the Internet as well as utilisation of the computer for other tasks (e.g. word processing). Thus, being computer literate (includes basic computer skills, Internet and e-mail skills) is an essential prerequisite for embarking on computer-mediated communication (including web-learning courses).

2.3.2. Features of web-based education

The various features associated with web-based learning have been identified by Khan (1997). A few of these features are extrapolated below.

1) Web-based learning is interactive

Students are able to interact with each other, with instructors, and also with online resources. Both instructors and experts in the field are able to act as facilitators to provide guidance and support to these learners. This type of education affords learners the opportunity to receive their education and training at anytime and in any part of the world. It allows for study material and 'classes' via email to be accessible and available to almost anyone. This is, of course, subject to the presence of an infrastructure that can allow for access to this medium - i.e. electricity, computers, relevant software, telephone line and Internet access.

This form of distance learning has the benefit of being interactive. Students can interact with each other and their lecturers via 'online classrooms' (special chat-rooms) or via list-servers or email. According to Berger and Collins (2000), interaction and communication among students and their teachers is increased in this active environment of social learning as provided by a computer that enables access to local, national, and international networks.

These types of interaction are relatively asynchronous due to the fact that a message is typed and a response is then given a few seconds later (in the case

of chat-rooms) or a few hours later (e-mail and list-servers). Assignments and study tasks are sent through quicker and at a much cheaper rate via email. By cheaper rate, reference is made to reduced printing and transport costs.

This process also affords the learner more time to allocate to his/her studies. The inclusion of video-conferencing in this learning process enhances the distance learning experience as it adds the visual dimension and synchronicity to the process. This however, is also dependent on available infrastructure and finances. In South Africa this is currently available (if at all) to very few students due to infrastructural and economical obstacles. For video-conferencing to take place, both the recipient and message-sender have to have the required equipment (hardware and software) – which is not cheap. Video-conferencing also requires greater bandwidth as it takes longer to send audio-visual images then it would to send text.

Benefits of web-based learning (Driscoll, 1998 & Kilby, 1997):

- Training is easily delivered to users.
- Users have quick and easy access to learning sites, revisions and updates.
- There is controllable access to content. This is limited to what is made available by course instructors. Access to resources is however, unlimited.
- Schematic drawings, reference manuals, databases, and technical experts are all available online.

These are all dependent on an adequate infrastructure and the individual student's discipline, in terms of time-management and proactive learning style. By proactive, inference is made to the student actively seeking alternate resources and obtaining lecture notes on a regular basis – as greater emphasis is placed on the learner to determine his/her depth and frequency of learning. This is further highlighted below and overleaf in points 3, 5 and 8.

2) Web-based learning can be multimedial

Course material can be provided in different formats - e.g. text, graphics, audio, video, etc.

3) An open system is created

Learners have the freedom to move outside their environment. The environment refers to the online classroom, i.e. the course or lecture website. Whilst perusing a specific web site a learner can simultaneously move on to links to different web sites to perhaps obtain clarity on the initial piece of information. A book in comparison is perceived as a closed system owing to the fact that the author restricts the information available. This open system fosters much more user control and affords access to multimedia learning material.

4) Online searches are made possible

The library or resource centre is literally at the fingertips of the learner. Learners have access to numerous search engines and web sites to search for resources and information.

5) Web-based learning is strongly learner-controlled

The web facilitates a democratic learning environment. Learners are able to influence what is learned, how it is learned and the order in which it is learned (Schweir & Misanchuk, 1993 in Khan, 1997). Students decide whether or not they will engage in active participation or remain passive observers in this arena. Ideally, this type of learning should facilitate student responsibility and initiative as it promotes an ownership of learning. Once again, emphasis on the student's academic discipline is greatly emphasised. Students are in direct control of the material accessed and their time allocated to studies.

6) This type of learning is convenient

Kilby (1997) describes the live content as presented in web-based instruction as being "*as fresh as the moment and modified at will, in a structure allowing self-directed, self-paced instruction in any topic*". Students are able to structure their study schedule according to their lives - when and where they plan to log on for their study material. The key ingredient towards success in this type of learning environment is personal discipline - being able to adequately guide yourself to keep up with your required study tasks and goals.

7) It is cost-effective

It is cost-effective in comparison to face-to-face instruction. Learners' travelling costs are minimised. There is less emphasis on textbooks and more on online resources, thus the costs of course material are also minimised to a certain extent. Cost factors that do play a pivotal role here are set-up and telephone

costs. Set-up costs include computers, modems, Internet service provider (ISP) fees, software packages, etc. Not all students have access to personal computers and ISP's. These students thus rely on learning centres or Internet Cafés.

8) Collaborative learning is entrenched in web-based learning

Collaborative learning emphasises co-operative efforts among both course instructors and learners. This type of learning requires continuous active participation and interaction from both parties.

2.3.2.1. Disadvantages to web-based education

As with everything in life, there are also drawbacks to this type of learning environment. Web-based education brings to the fore the need for different skills as opposed to traditional methods of learning - writing is replaced by typing and learning is now asynchronous (similar to distance learning). Feedback in distance learning courses via the web is however, now available sooner.

Basic computer and Internet skills are essential in empowering a web-student. The student needs to be able to operate the computer, know how to access email and navigate the web. Learners thus, must have adequate computer, browser, and Internet skills. A technical infrastructure is also required - Infrastructure required to run programs; computer system requirements; network capacity; gain access to the Internet, etc. (Driscoll, 1998 & Noblia, 2000).

In addition to these technical barriers, learners have to adapt their traditional (previously learnt) forms of learning and communication behaviour to accommodate those of this new environment. Learners should possess adequate "web-smarts". By "web-smarts" reference is made to understanding the nuances of Internet/ e-mail communication styles that are engaged within the virtual environment - use of emoticons and an understanding of the 'netiquette'. A basic knowledge of the English language is also required. Communication in the WWW is predominantly in English.

Thus, understanding how to use Internet and e-mail is one facet of the web-learning process, and understanding the ‘e-mail language’ and netiquette entailed therein proposes another facet.

a) Netiquette

The word 'netiquette' was derived by merging the words 'network' and 'etiquette' (Scheuermann and Taylor, 1997). Netiquette defines socially acceptable rules for harmonious social interaction in the web environment. It describes etiquette of the Net. The term '"Netiquette' has been described by Netcom Services as ' The conventions of politeness recognised on Usenet and in mailing lists'.

The technological advances that have brought us the interconnected network of computers called the Internet has also brought us a cultural web that expands the globe. This web *'transcends geographic boundaries and legal jurisdictions. Something quite legal in one place may not be elsewhere*" (MultiNet, 1996 in Scheuermann & Taylor, 1997, p. 269).

2.4. Computer-mediated Communication

"The important image is not the one on screen, but the one in the user's mind."

Paul Heckel (Soulier, 1988, p. 79)

Computer-mediated communication (CMC) refers to communication that is established between people via a computer and the Internet. It is usually text-based and can be asynchronous (anytime, anywhere) or synchronous (real-time, anywhere) ((Noblia, 2000; “Computer Mediated Communication”, 2000 and Donath, 1996).

There are two perspectives typically utilised to define CMC, namely a computer perspective and a behavioural perspective (Eastmond, 1995).

1. The Computer Perspective

   This perspective refers to networked mainframe software that facilitates structured asynchronous communications, and is accessed by a terminal or personal computer with a modem. It looks at the infrastructure that is required to facilitate computer-mediated communication and what types of structured communication can occur via this medium. Essentially this perspective focuses on the physical aspects in terms of hardware and software, including bandwidth capabilities.

2. The Behavioural Perspective

The Behavioural perspective, on the other hand, looks at social phenomena. This perspective refers to a group of people who engage in communication, learning, or decision making that is mediated by a computer network application. It focuses on the interactivity, even if it were asynchronous, between individuals in these computer-mediated, text-based environments.

The benefits and disadvantages associated with the different aspects of each perspective have been adapted and are discussed below ("Computer Mediated Communication", 2000 and Gannon-Leary, 1998).

2.4.1. Multiple site facilitation

Individuals may participate from any location, sometimes worldwide, depending on site access to networked computer resources. This is extremely well suited to the process of distance learning. Computer-mediated communication is fast, cost-effective and global. It provides access to experts online who would not otherwise be available. Access in CMC is flexible and convenient. It enables students to learn in their homes and they are thus able to control their environment. This form of communication is also time-effective through electronic interaction as opposed to face-to-face interaction. However, finding the time to log on may be difficult for those students with poor time management skills.

2.4.2. Structured communication

Computer software allows for multiple, concurrent discussions that are kept separate and provides participants with different methods for engaging in select conversations. Information e-mailed can have either single or multiple recipients. This also affords other participants to participate in a discussion. At this point learners have control over the information that is sent to lecturers or classmates or posted to list servers. Discussions can take place in chat rooms, but learners can also have simultaneous private discussions at the same forum without disrupting the general discussion taking place.

Morris and Ogan (1999) have classified communication via the web (i.e. on the Internet) into four broad categories:

(a) One-to-one asynchronous communication, such as e-mail. This chapter focuses on e-mail based communication, as it is the main communication medium engaged in the web-based learning process under exploration. It also incorporates what is described below under many-to-many asynchronous communication

(b) Many-to-many asynchronous communication, such as Usenet, electronic bulletin boards, and List servers that require the receiver to sign up for a service or log on to a program to access messages around a particular topic or topics. This is essentially e-mail sent to multiple recipients.

(c) Synchronous communication, that can be one-to-one, one-to-few, or one-to-many and can be organised around a topic, the construction of an object, or role playing, such as MUDs (Multi-User Dungeons and their various transformations), Internet Relay Chat and chat rooms on commercial services.

(d) Asynchronous communication, that is generally characterised by the receiver's need to seek out the site in order to access information, which may involve many-to-one, one-to-one, or one-to-many source-receiver relationships e.g., Web sites, gophers, and file-transfer-protocol (FTP) sites.

2.4.2.1. Asynchronous communication and E-mail

Electronic mail, commonly known as e-mail, is an information interchange that involves messages that are sent from one computer to another, automatically passed through computer networks and/or via modems and telecommunications systems. This is the most widely used form of computer-mediated communication. It is an incredibly powerful and effective means of communication (Gannon-Leary, 1998). This view is generated through the 'speed' of e-mail communication.

E-mail has increasingly become a preferred form of communication for many people as it allows them to extend discussions without the constraint of time requiring them to be present when new messages are sent. E-mail mailing lists (Listservs named after the software program used to run many of them) are one of the most widely used genres of computer-mediated communication (McElhearn, 1996).

The e-mail structure is similar to that of a letter - it is also asynchronic and in written form. The main advantages of this medium are that the production, delivery and consumption times are shorter (Noblia, 2000 & Cronjé, 1999); however the disadvantage exists (as in the case of the letter), that certain social customs are dropped (Noblia, 2000). E-mail appears to be gradually replacing the letter due to its speed, convenience and the fact that it is relatively inexpensive. It can be used for private communication between an instructor and student, or for submitting written assignments.

Participants can be involved in the same online conversations at different times. Some learners may prefer asynchronous communication as it does play the role of reducing social anxiety ("Asynchronous Communication", 2000). Learners are able to think carefully through what their responses are, look at it on the computer and edit where necessary. Students are afforded the luxury of time to think before they respond. In this context, learners are not pushed to 'think on their toes' so-to-speak. According to Gannon-Leary (1998), e-mail is both personal and informal and has the power to transform an individual from passive recipient of mail to an active participant in an on-line discussion.

Learners are also afforded the convenience of scheduling their study routine around their lives and not the other way around. In this highly interactive environment in which frequent dialogue is enabled, active learning is also promoted. There is promotion of discussions in greater depth, or focus on topics of special interest to students.

However, information overload is also a strong possibility during asynchronous communication. Students may have trouble following multiple threads of conversations. The conversation can become disjointed, e.g., when someone responds to a message posted a long time ago or when many learners are responding to parts of chat-room discussions at the same time. There is a delay between the time a question is posed and the responses to that question. Some students find this frustrating and anxiety provoking.

Fatigue can also occur as a result of information overload and eyestrain from continuously looking at electronically generated text on a computer monitor. Information overload may occur resulting in messages being missed or misread. This would be plausible in the context of prolonged exposure within short time periods ("Computer-mediated Communication", 2000; "Asynchronous Communication", 2000 & Gannon-Leary, 1998).

Asynchronous communication may also generate situations wherein it takes longer to make decisions and is thus harder to gain a consensus on certain issues in order for groups discussions to move forward. This could lead to various levels of frustration expressed by group participants.

2.4.3. Interactivity in text-based environments

Current mainframe computer systems, which permit distance and easy dial-up access, only allow conferencing systems to accept and display text. As previously mentioned, communication is almost solely text-based. Computer-mediated communication links conversation to written language. Chats (e-mails, chat rooms, etc.) are spontaneous conversations that occur in writing.

An individual's English writing skills are improved, to an extent. There exists the scenario wherein abbreviations are used quite often in e-mail discussions as opposed to complete words. This may also impede writing skill development in its current acceptable form. A permanent archive of class discussions for further reference is also provided. On the flip-side, saving old messages takes up disk space and slows down the system but may be necessary for self-protection (from litigation, e.g., bearing in mind security/confidentiality breaches) and attachments can also carry viruses.

Online communication is continually shaped and depends on the input and feedback of its multiple participants. Learners can choose the extent of their involvement that they are willing to engage in. This does also allow for the situation of the 'silent learner', i.e. one who observes the discussions but does not necessarily participate in them. This may lead to conflict situations within the context of the web-classroom.

Real-world communication is primarily non-verbal (Donath, 1996). It consists of physical actions such as gestures, facial expressions and vocal tone. Unlike the written word, which is deliberately produced and passes through much conscious filtering, non-verbal expressions are often made subconsciously, often revealing a great deal about their maker's ideas and opinions. However, these non-verbal expressions are missing from today's text-based on-line environments. Text-based computer-mediated communication affords an advantage to individuals who are articulate and comfortable with writing (typing) as opposed to speaking ("Computer-mediated Communication", 2000). Learners with poor writing or typing skills may feel frustrated, especially those who feel that they have 'nothing important' to say.

During the course of face-to-face social interaction, there are continuous social cues offered between participants that facilitate the interpretation of what is being communicated and how it is communicated. In computer-mediated communication there appears to be a lack of social cues (tone, pitch, body language and facial expression) that individuals have been accustomed to. This lack of face-to-face social cues has the potential of leading to misunderstandings and hostile, insulting messages (flaming) (Noblia, 2000).

The message-recipient is left to interpret the message as he/she chooses without being afforded the ability to contextualise the message in the traditional manner, i.e. via the use of audio-visual stimuli and other social cues. The lack of visual and auditory stimulation may be frustrating for some students. Students may feel excluded if no one responds to their messages, or if other students do not communicate as often as they would like ("Computer-mediated Communication",

2000; “Asynchronous Communication”, 2000 & Gannon-Leary, 1998). This may increase the number of observing or passive learners, i.e., those that read the conversations taking place but do not participate as they may feel that they do not have anything witty enough or important enough to say in writing that will leave a permanent record.

The same fear relates to the fact that the line between what is private and what is public becomes blurred, as it is very easy to forward a message to someone else. It is easy to misaddress, copy, circulate, forward or alter e-mail messages. Thus, there exists a lack of stringent privacy and confidentiality control. In academia especially, anonymity is not ensured. The use of pseudonyms is not possible in this environment.

2.4.3.1. Group Involvement

Computer conferencing systems allow private, individual electronic message exchanges, but most communication takes place in larger, group discussion areas where each member can read and respond to each communiqué.

Gannon-Leary (1998) expressed concern that e-mail may replace human contact thereby resulting in loss of spontaneity and deprivation from fellow learners' or colleagues' valuable experience and expertise. This may be true as regards the lack of spontaneity in computer-mediated communication. However, the researcher disagrees with Gannon-Leary's deprivation belief. Computer-mediated communication affords learners the opportunity to obtain valuable information and

expertise from both fellow learners and lecturers across the globe. Access to persons of expertise around the world is provided through computer-mediated communication. Due to the multiple recipient potential of computer-mediated communication, all learners are privy to these types of discussions.

2.4.4. The social world of computer-mediated communication

> *"Computer mediated communication, through the written language and, to a lesser extent, through the oral language, has turned into a tool that makes it possible to construct a new type of social interaction beyond space barriers" Noblia (2000).*

The Internet has allowed for both physical and social distances to become increasingly irrelevant to information-based interactions and transactions (Watts, 2000). Attributes such as income, age, and race, etc., that have traditionally coloured human interaction are being augmented and in some instances even replaced by new criteria. These new criteria are increasingly being based on personal interest and knowledge.

The technologies characteristic of cyberspace such as the electronic networks, computer-mediated communication and virtual reality systems, appear to remove us from our body and the embodied world (Hoffmann, 1997). The physical boundaries of the human body are thus made more permeable. Contact can be made with anyone, anywhere. Physical distance does not restrict contact amongst people in cyberspace. Students are able to interact in an environment that affords them the time and medium to express themselves as best (or as worst) as they choose.

"The mental world – the mind – the world of information processing –

is not limited by the skin" (Bateson, 1987, p. 460).

Although, physical boundaries are transgressed and the 'web-citizen' or 'Netizen' can assume any identity in the virtual frontier, students interacting in this environment are less likely to be subjected to anonymity in the online classroom environment. This is owing to the fact that students are registered for courses and are introduced to each other and to the lecturers. The complexities of the 'out-of-body' surfing process are not perceived as relevant or does not appear to impact as significantly on the web-student, as they would in the context of anonymous online discussions.

2.4.4.1. Cyberspace

Cyberspace has been described as being a generic concept for the imagined world within the computer that is portrayed in the lists of Usenet groups and postings - the Internet is a cyberspace (Stein, 1999). The physical laws of space (in terms of what is normally regarded as space) may not apply, as there is this 'removal' of physical distance and redefinition of personal space (Stone, 1995). Cyberspace contains physical boundaries as defined by the individual-computer unit – however, this boundary is transgressed by the space of the Internet, that of the virtual frontier.

A person's physical body allows him/her to engage in active exploration of his/her environment, and in this way a first-hand or first person experience is generated (Dautenhahn, 1999). Exploration in cyberspace is very different. The senses typically involved in exploring one's social environment: touch, smell, sight and hearing, are

not engaged in computer-medicated communication. Typical social cues are extremely limited, if not altogether absent in this type of environment. Participants in this conversational arena rely solely on the 'written word'. The social landscape of cyberspace provides a range of technologically mediated environments within which humans can interact (via computers) (Hoffmann, 1997).

Stone (1995, p. 33) further described cyberspace as "*a space of pure communication, the free market of symbolic exchange*". Social interaction in the world of cyberspace is enhanced through the use of media accessories (often expensive) such as video-conferencing. This facility allows for the ability of real-time conversations whilst affording the conversational participants the opportunity to obtain some of the social cues (non-verbal) that they would typically experience during a 'live' (off-line) social interaction.

Cyberspace poses the potential of enlarging a person's social network of people (Dautenhahn, 1999). A person is able to interact with anyone, anytime, and also at any location in the world. Humans are creatures who live in a three-dimensional world, wherein the concept of distance has historically been determined by separation in space, physical space. This separation is enforced by physical geographical boundaries (Watts, 2000). The Internet or the World Wide Web, even though two-dimensional, allows for these boundaries to become permeable. It is thus possible for communication to occur between participants in different geographical locations - much quicker and richer than 'snail' mail (post) and is more cost effective than a telephone call. It is also not dictated by time zones (as with the telephone

call). Individuals choose the amount of interaction that they engage in as well as the richness thereof.

2.5. Concluding comments

The social landscape of the virtual frontier is vastly different from that which people are traditionally or commonly used to. In this 'new' millennium, many South Africans, even at the school level, are interacting in this arena and experiencing this communication style. Communication wherein what you are able to see is only the text-message 'glaring' on a computer screen. This is the representation of the person who sent the communication as well as the content of the communication itself. The interpretations of the sender's message and of the sender are left up to the recipient. The text message and the tone perceived in the message are used to create a picture of the sender in the 'minds-eye' of the recipient. This gives new meaning to the phrase 'reading between the lines'.

CHAPTER THREE: THE THEORETICAL LENS

"Systems thinking is a discipline for seeing wholes. It is a framework for seeing interrelationships rather than things, for seeing patterns of change rather than static snapshots. And systems thinking is a sensibility- for the subtle interconnectedness that gives living systems their unique character."

Peter Senger, The Fifth Discipline (http://sysdyn.mit.edu/sd-intro/home.html, 11/10/00).

3.1. Introduction

The systemic approach has been selected as the theoretical lens for this exploratory research. This theoretical perspective allows for the conceptualisation and inclusion of all relevant aspects of a person's interactional system. It allows the researcher to see the processes and patterns involved in a person's interactional system. Chapter three briefly elaborates on the definition of systems and offers some insight into the systemic lens that has been employed in this research study. The theory is rather complex and specific (related) aspects have been highlighted in this chapter.

3.2. What are systems?

There are many descriptions and definitions of systems. Each not necessarily different, but rather offering different angles of viewing systems and systems thinking.

Systems are integrated 'wholes'. The properties of these 'wholes' cannot be reduced to those of smaller units. Natural systems are wholes whose specific structure is created through the interaction and interdependence of their parts. This interaction or activity of systems involves transactions. These transactions (inter-relations in the system) are the simultaneous and mutually interdependent interaction that takes place between multiple components of the system (Capra, 1982).

"General system theory, therefore, is a general science of 'wholeness'...The meaning of the somewhat mystical expression, 'the whole is more that the sum of its parts' is simply that constitutive characteristics are not explainable from the characteristics of the isolated parts. The characteristics of the complex, therefore, appear as 'new' or 'emergent'..." (Von Bertalanffy in Taschdjian 1975).

Von Bertalanffy (1967, 1968 in Duhl, 1983, p. 54) defined living (organismic) systems as being "*a complex of components in dynamic interaction*". Dynamic interaction in this context refers to the active components that inform, impact on, or exchange with each other. These living systems exist in time and space. They are composed of matter and energy, and are engaged in exchange of matter and energy. Systems are organised by information and the exchanging thereof (Miller, 1971b in Duhl, 1983, p. 54). Thus, systems can be regarded as being open. Open systems are capable of exchanging energy, matter, and information. The exchange of energy, matter and information in this open system is regarded as the dynamic interaction of these component parts (Duhl, 1983).

Due to having dynamic interaction, open systems are susceptible to change over time. It is this change over time (evolving) that differentiates a living system from a nonliving system. Living systems have the capacity for the self-organisation of progressive differentiation, i.e. they have the ability to evolve parts (Duhl, 1983).

Ossimitz (1997), elaborated on the general characteristics that define a system:

1) A system is composed of elements (units/ components)

   In this research endeavour, elements refer to the individual learners and lecturers/course presenters.

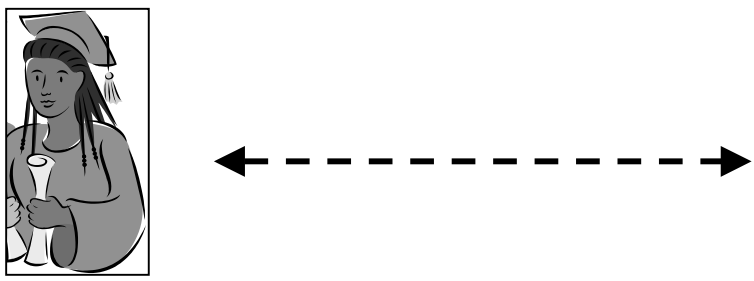
2) There exist relationships (inter-relations) between these elements.

   A system is not just a collection of elements. There are relations between these elements. Systems thinking focuses on the relationship between these elements and not necessarily the elements themselves. The transactions (interactions) that constitute these relationships between learners-and-learners and between learners-and-course presenters are focussed on from the level of the main system.

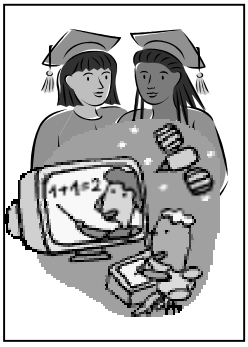
3) Every system has a boundary to its surrounding environment.

   This boundary can be more or less permeable. System boundaries are arbitrary 'lines' that differentiate each system from the next. System boundaries are primarily drawn observer-dependent or time-dependent. What this basically implies is that the boundaries are defined by the observers and are contextualised in a given time frame.

An individual learner's system is delineated by the physical boundary of his/her body, whereas the web-class system is delineated by the imaginary boundary seen to enclose all members of that web-class. In this sense the web-class is seen as a primary system and each individual in that web-class is perceived as a sub-system of this web-class system (figure 3.a). This can further be extrapolated to identify the supra-system. The web-class can be a member of the larger online 'school/university' community system and this community system is seen as the supra-system. Bateson (Dell, 1986) describes the world as a multilevel system of systems wherein all social and ecological systems are circularly organised, and circularity interconnected into larger and larger systems.



Individual - subsystem



Web-class System

Figure 3.a

Why is there the need for system boundaries?

System boundaries are important to ensure the identity of the system. In some instances the boundaries may even determine the system. Relations (relationships) that occur between a system and its environment occur at these boundaries. It is at these boundaries where decisions are taken as to what can

enter or leave the system, i.e. the output or input of the system (Ossimitz, 1997). Systems boundaries allow for a sense of belonging. This implies a learner is able to feel part of a class-system, i.e. is a member of that system. The word 'member' in itself implies a 'belonging'. In the case of the 'individual' system (i.e. individual learner) this could refer more appropriately to an identity. Further depth into this aspect will not be covered in the scope of this system.

4) Systems portray a dynamic behaviour over time.

This behaviour is typically related to the goals of the system. For example, human beings are determined to ensure their self-preservation essentially via homeostasis. Behaviour changes as the system evolves in response to these behavioural changes. There is continuous feedback and change over time in the system. The system (both sub-system and main system) adjusts (acclimatise) on an ongoing basis in response to various changes to the system. This is in response to the nature of the system to protect itself and maintain it's 'structural integrity'.

3.3. Systems theory - the perspective

"The systems view looks at the world in terms of relationships and integration"

Capra (1982)

Systems theory was proposed in the 1940's by the biologist Ludwig von Bertalanffy and then this theory was further pursued by Ross Ashby and others. Von Bertalanffy emphasised that real systems are open to, and interact with, their environments, and that they can acquire qualitatively new properties through emergence, resulting in continual evolution (dynamic interaction).

This theory focuses on the arrangement of and relations between the parts that connect them into a whole. An entity is not reduced into the properties of its elements. This arrangement determines a system.

Systems theory is the cross-disciplinary study of the abstract organisation of phenomena, independent of their substance, type, or spatial or temporal scale of existence (“Systems Theory”, 2002). This theoretical perspective investigates both the principles common to all complex entities, and the (usually mathematical) models that can be used to describe them.

System thinking is actually a method of studying the world around us (Foster, 2000). Understanding how elements in a system interact with each other forms the key concept of systems thinking. Interaction in a system occurs through 'feedback loops'. Within the context of a feedback loop, a change in one variable, effects a change in another variable over time. This change then influences the original variable, and the

'loop' continues. This is what was earlier referred to as dynamic interaction, i.e. dynamic behaviour over time that is portrayed by a system.

Through the process of systems thinking an understanding of the basic structure of a system is pursued and the interactions that occur within it. It is through this understanding that the behaviour produced in a system can further be understood.

Capra *(*1982) distinguished five criteria that characterises the systems approach:

1. Focus is moved from the parts to the whole.

   The properties of the parts can be understood only from the dynamics of the whole, i.e. the learner sub-system and the web-class system.

2. The process is studied as opposed to the structure.

   Each structure is seen as a manifestation of an underlying process. The term process encapsulates the interactions or transactions between the parts of a system.

3. There is a shift from an objective science to an epistemic science.

   Capra believed that the epistemology, which he described as the understanding of the process of knowledge, must be explicitly included in the description of natural phenomenon.

4. The metaphor of knowledge as a building is replaced by that of the network.

   The metaphor of a network portrays a less rigid and linear structure than that of a building, as it is dynamic. It is dynamic in that it reflects change and integration.

5. Approximate descriptions are used as opposed to truth.

   Capra also believed that this insight was crucial to all modern science. The systems approach recognises that all scientific concepts and theories are limited and approximate. It is owing to this that use is made of approximate descriptions.

Systems thinking enables one to see the parts in the picture, to step back and see the bigger picture and how all the parts in the 'big picture' are connected, what patterns of relations occur between these parts, and how they influence the 'big picture'. In this sense, the bigger picture refers to seeing the whole. The whole in this research process is regarded as the web-based learning system (figure 3.b).

This approach emphasises the interactions and inter-connectedness of the different components of a system (Lerner, 1972 & “What are Cybernetics and Systems Science?” 2002). The systems approach typically focuses on the more complex, adaptive, self-regulating systems, which are referred to as "cybernetic" (“What are Cybernetics and Systems Science?” 2002). Cybernetic systems are essentially closed systems regarding matter and energy. They are however, open in reference to information flow. This will be elaborated upon later in the chapter.

3.4. Systemic Concepts

3.4.1. Cybernetics

The terms 'cybernetics' and 'systems theory' are used interchangeably because they both pertain to the same fields of inquiry and they assert that one can mentally and arbitrarily carve out any part of the universe and call it a system (Geyer, 2000). The term cybernetics is derived from the Greek word for steersman, and Geyer roughly translated this as the art of steering.

The founder of cybernetics, Norbert Wiener, offered the definition of cybernetics as a science of control and communication in mechanisms, organisms and society (Lerner, 1972; Young, 1969; Hoffman, 1990; Bale, 1995). Hanson (1995) referred to this as the "*self-regulating properties of systems*" (p. 40).

Cybernetics represents the general theory of control that can be applied to any system (Lerner, 1972). In this context 'system' refers to a group of elements that are considered as an interconnected whole. Cybernetics is further differentiated into first- and second-order cybernetics, which will be briefly reviewed later in this chapter.

Within the social systems (e.g. web-class), in which we interact, there are further subsystems (learners and lecturers). These subsystems are viewed as interactive. This is so because they constitute the larger system of human (social) interaction (figure 3.a).

3.4.2. Autopoeisis

Autopoeisis is a key characteristic of living systems. Autopoeisis (self-production) was introduced in the 1970s by the biologists Maturana and Varela to distinguish the living from the non-living. An autopoietic system was defined as consisting of a network of interrelated component-producing processes wherein the components in interaction generate the same network that produced them (Geyer, 2000).

While social systems are self-organising and self-reproducing systems, they do not consist of individuals or roles or even acts, as commonly conceptualised, but of communications. Social systems are based on communication as a mode of meaning-based reproduction. Communication is thus, perceived to be the primary unit of social systems. The concept of action is utilised to ascribe certain communications to certain actors. Consequently, the chains of communication that take place in a social system are viewed as a chain of actions. This chain allows the social system to communicate about their own communications and to also select their new communications, i.e. to be active in an autopoietic way. Communication is the process of information provision that occurs between the elements in a system (Geyer, 2000). Communication is the process of information flow between sub-systems and within a system. It is thus perceived as vital to the longevity and optimal functioning of a system.

3.4.3. Feedback

Information flow within larger systems, and thus between the subsystems is referred to as feedback. Feedback is the ability of a system to reintroduce output as input (Hanson, 1995). Feedback can be construed as being both positive (effecting a change) and negative (not effecting a change). Thus, whether or not there is change in a system would reflect what type of feedback occurred. Both negative and positive feedbacks serve the continuity of a system (Hanson, 1995). Ossimitz (1997) aptly describes positive feedback as reinforcing and negative feedback as balancing.

The researcher agrees with Lerner's (1972) revised concept of the world that includes information. The classical concept of the world consisting of matter and energy has evolved to the concept that the world actually consists of three components: energy, matter and information.

Information is integrally embedded within communication. As Hanson (1995, p. 97) very aptly stated "one cannot not communicate". This implies (technically), that there is always information flow whether it is regarded as positive or negative. The information flow within the system can take place both verbally and non-verbally. The nature of the information flow is embedded within the specific contexts of the specific system. In the scenario of web-based learning the information flow occurs non-verbally and almost solely via text, which is why context plays an even bigger role in this type of system. The process of interpretation, i.e. assigning meaning to the text-based information communicated, is different in a web-based learning environment.

The source of any information is observation accompanied by active experiment. Control is always associated with the use of observations, the use of information both on the controlled system and on the external medium with which it interacts, as well as on the results of the control actions. These apparent associations to which control is seen as being linked, is indicative of the cognitive nature of the concept of control (Lerner, 1972).

Controllability and uncontrollability can be regarded as contingencies that are influential to our learning of behavioural patterns; and as such are resultants of and also influence our cognitive processes, especially our perception of our societal roles and us. In computer-mediated communication our perception of others is not necessarily controlled, as there is no visual authentication of the others. Within the realm of this communication medium, reliance is based on what the other chooses to reveal (or in some cases not to reveal) about him-/herself.

Cybernetics does not only consider control systems in their static state but also during movement and development (Lerner, 1972). The cybernetics paradigm shifts the focus of our discourse away from discrete material substances, one-way causality, structure and summativity. A cybernetic explanation focuses on process and behaviour, dynamic or animated organisation, circular or more complex than circular causality, the mutual causal loops of feedback cycles, interaction between multiple variables, and emergent morphogenesis.

The cybernetic stability of a system is best visualised as a pattern of events (an animated organisation of exchanges and transformations within the system's

parameters). The manner in which the system's differentiated components are interrelated gives the differentiated parts their distinctive properties (Bale, 1995). Within what Bale refers to as 'more complex systems', the differentiated parts show properties that characterises them as being constitutive of a larger whole.

Behaviour occurs within the context of and is influenced by the relational patterns that occur within social systems. This behaviour is dependent on our perception of our roles, the perception of the degree of control that we have over our life, and also how we perceive having control over other members of our social system. This process, or rather pattern of interaction, is complex. The information flow is continuous in these systems. In web-based learning systems, owing to asynchronous modes of communication, information flow (and also feedback) is not always immediate. However, the asynchronicty of information flow does not hinder continuous flow of information between the sub-systems.

With the different patterns of interaction and the learning of the ‘new language’ (e.g. emoticons), different ways of behaviour expression (e.g. web-smarts) and the new mode of ‘voice’ (i.e. e-mail, more specifically the typed word) – these perceptions of control change – it may be more appropriate to say that they evolve to a different level or extent. The evolution of this control perception is continuous based on the type and richness (meaning assigned to the message) of the communication flow.

The focus on cybernetic aspects of systems allows us make sense of the impact of such patterned sequences (Duhl, 1983). Thus, general systems theory includes cybernetic theory as belonging within and descriptive of important aspects of living

systems, having to do with information exchange and regulation. Cybernetic theory is not perceived as a complete or inclusive theory of human behaviour – it looks at communication processes within a system.

A cybernetic interconnection implies that "*no part of such an internally interactive system can have unilateral control over the remainder or over any other part*" (Bateson, 1972, p. 315 in Dell, 1986, p. 514).

Bateson (in Dell, 1986) used the term "*lineal causality"* to refer to unilateral control. The world is composed of circular loops of causality in which humans continuously participate, thus there is no true perceptions of lineal causality in human interactions (Bateson, 1972 in Dell, 1986, p. 514). When we perceive seeing flat (lineal) arcs of causation, these are really part of larger systemic circuits. Failure to perceive the 'larger circular causal system' is what Bateson referred to as the 'epistemological error'.

Thus, feedback gives form to the basic premise of systems thinking - 'everything is related to everything' (Hanson, 1995). Change in one part of the system effects a change in another part of the system. This affords the dynamic state of systems. One of the aspects that will be looked at in this thesis is the effect of change in communication style on the system of the individual and that consequential effect on the communication processes within the supra-system of the class. Both negative and positive feedback, eventually reveal patterns of change and non-change that occur in the system.

In essence, cybernetics is a science of purposeful behaviour, i.e. goal-directed behaviour (Dooley, 1995). Through this lens we are able to explain behaviour as being the continuous process of action of a system to maintain certain conditions close to a goal-state. This process first entails perceptions, organising these perceptions and then comparing these organised perceptions against a desired (optimal) goal-state. Corrective behaviour is then enacted if the perceptions vary from the system's desired goal- state. Thus, being able to perceive, compare, decide and act purposefully makes a system cybernetic.

This cybernetic lens allows us to see how behaviours aid or hinder the effective functioning of system. These behaviours refer to the number and quality of the interactions that take place between the individual sub-systems. Continuous interaction (communication and information flow) is deemed necessary for both adequate (optimal) functioning and survival of a system.

3.4.3.1. Equifinality and multifinality

Hanson (1995) postulated equifinality and multifinality as being extensions of the systemic premise that a change in one part of the system effects a change in all parts of the system. Essentially it contextualises the events or changes taking place in a system as it requires an understanding of that system in order to interpret the effect of various stimuli on the system.

Equifinality indicates that various different stimuli can have the same end result, whilst multifinality indicates that a single stimulus can have various results. This

affords further dynamism to systems. Thus, it allows for one to pay careful attention to the consequences of change. A change in communication pattern, as an example (in the case of computer-mediated communication) can have varying outputs on different individuals. This is dependent on the individual's comfort and extent of adjustment to the new medium of communication. As previously discussed this mode of communication is different from the one that the learner has been accustomed (conditioned) to. The manner and extent to which the individual learner is able to successfully embark on this mode of communication will influence the way the learner receives and processes information within the system, as well as how the learner is received by the system.

3.4.4. First-order cybernetics (classical)

First-order cybernetics focussed primarily on negative feedback loops as opposed to positive feedback loops. Geyer (2000) established that when a negative feedback loop occurs (naturally or is constructed), the performance of this system is compared with a pre-set goal. Corrective action is taken whenever there is a deviation from this pre-set goal.

The focus of first-order cybernetics is on homeostasis or equilibrium-maintenance. It facilitates the restoration of a system's equilibrium whenever it is disturbed by external influences that impinged on that system. This approach eventually became considered to be conservative, simplistic, mechanistic and linear. This was consequently not deemed to apply to the real world of human interaction (Geyer, 2000). This perspective did not take cognisance of dynamic interaction, facilitated by

continuous communication and change within a system, neither did it recognise the adaptation and evolution of a system to survive within also changing supra-systems.

3.4.5. Second - order cybernetics (modern)

Heinz von Foerster, who defined first-order cybernetics as the cybernetics of observed systems, and second-order cybernetics as the cybernetics of observing systems, coined the term 'second-order cybernetics'. Second-order cybernetics includes the studying of the observer(s) in the systems. It deals with living systems (Geyer, 2000). Second-order cybernetics focuses on understanding the evolution of biological and social complexity than on controlling it. Thus, second-order cybernetics looks at morphogenesis and positive feedback loops.

In second-order cybernetics, the system has the ability to reflect on its own operations on the environment, and even on itself. These operations can generate variety in the environment, or in itself, which can then reflexively be recognised as being due to variations in the system (Geyer, 2000). This makes them recursive, i.e. observations can be observed and communications can be communicated – and change in response to change.

3.4.6. Meaning

"Life takes place in context" (Duhl, 1983, p. 3).

Von Bertalanffy (Duhl, 1983, p. 58) stated, "*Organisms are directed by internal phenomena, though they are influenced, affected, and impacted upon by external forces*". Thus, context is always implied.

The general systems model allows us to look at contexts and phenomena from different levels of a system sequentially, whilst acknowledging that all are interconnected and occur simultaneously. We derive meanings from our interactions with the world and with each other. Thus, there is no world without words (Hare-Mustin & Marecek, 1990a). "*The whole gives meaning to each part, and each part without the whole has little meaning*" (Neuman, 1997, p. 31).

It is practically impossible to not communicate (Hanson, 1995). All communication is based on context, a pattern of relationships and connections. Context is required for communication to take place, thus content only derives meaning in a given context (Bateson, 1987). Without context there is no meaning (Hare-Mustin & Marecek, 1990a).

Human beings have the capacity for symbolic activity, i.e. the ability to create symbols, to imagine, hear or feel "something" and represent it. Thus, human beings have the capacity to create meanings, "*to create and transmit connections about the self and world, to one another through those symbols*" (Duhl, 1983, p. 58).

Construction of meaning in web-based learning environments, wherein there is computer-mediated communication channels, is very different from the manner in which one is accustomed to. Meaning in this context is very much recipient-dependent. This is the information flow that is embedded within the context of the web-class system and the learner-system.

All meanings construed are products of human interaction (Hare-Mustin & Marecek, 1990a). Consequently meanings are multiple, changing, and continuously being renegotiated by communication and action. Context is facilitated by nonverbal audiovisual cues e.g. tone of voice, body language, etc. Nonverbal cues are continuously searched to define context so as to construe meanings (Bateson, 1987).

Language is the key to meaning because all explanations, all theories, occur within language. In the context of the virtual environment this occurs primarily within the English language. The words are English words that are communicated non-verbally. A learner's comfort and scope of the English language (especially if English is not his/her first language) can render meaning construction difficult. In the context of computer-mediated communication there exists no social cues (verbal or visual) that serve to validate meanings interpreted. Thus, the process of constructing meanings is rendered more difficult and open to multiple interpretations. Meaning is assigned differently in these types of interactions – the communication flow in these systems are nonverbal, and text-based. Meaning is more subjective than in the face-to-face scenario as there is primarily no audio-visual validation.

Explanation provides the reason for, or cause of, that which we experience. Thus, explanation must always be met by experience.

There are two crucially important domains that are Meta to experience (Dell, 1986):

(a) Description

Description is regarded as an operation performed in language by an observer upon his/her experience. Thus, it allows us to represent our experience to ourselves and to others. Description enables us to speak of our experience.

(b) Explanation

Explanation is Meta to experience and the cause or reason for experience.

Human experiences can never be lineal, unilateral, or passively received - they are actively constructed. Our experiences are "*always the active product of our interaction with the medium in which we exist*" (Kant in Dell, 1986, p. 520). Thus, the purpose of explanation is not to describe our experience but to supply the reason for the experiences that we have described. In order to prove a scientific explanation, we must first take into account all of the contextual variables that support and allow for the occurrence of these events that we have experienced.

Experience does not have to only be construed as lineal. Experience is dependent on one's cognitions, perceptions and interpretations. Something could have happened to a person that can be seen as an experience. But experience is very much a subjective concept. It is contained within the 'How?' How did I experience this event/emotion? This experience of experience being subjective is in itself subjective. It is dependent on whether or not we construe our relational patterns, within the world in which we are participating or interacting members of, as being linear or non-linear.

3.4.6.1. Self-reference

The phenomenon of self-reference is somewhat typical of human beings, both on and individual and a group level. Three meanings of self-reference have been distinguished (Geyer, 2000):

1) The "neutral" meaning

   This is applicable to non-biological systems. 'Self-referencing control' in these systems indicates that any changes in the state of a system are dependent upon the state of that system situated in a specific time (at a previous moment). Geyer used the example of the birth rate being dependent upon population size to illustrate this.

2) The "biological" meaning

   Within the framework of this meaning, one's senses and a memory are the minimum requirements. A self-referential system in this context is defined as a system that contains information and knowledge about itself (its own state, structure, and processes).

3) The "stronger" second-order cybernetics meaning is indicated here. The system (an individual or a social system), collects information about its own functioning. The information collected can influence that functioning. The basic requirements

in this context are self-observation, self-reflection and to an extent freedom of action.

The self-referential potential of systems is a prime characteristic of social systems. Knowledge collected by the system about itself influences both the structure and the operation of that system. This knowledge is fundamental to information flow, or feedback.

3.5. The construction of social reality

"We each live inside the domain of our own experiences"

(Dell, 1986 in Hoffman, 1990, p. 517).

Human beliefs about the world are social inventions. It regards the development of knowledge as a social phenomenon (Hoffman, 1990). According to this position, perception is seen as only being able to evolve within a cradle of communication. How do learners perceive the web-based learning environment? How do they communicate within this environment? How do learners perceive each other and the transactions that occur within the class-system in this environment?

A set of meanings emerges through interactions between people (Hoffman, 1990). These meanings form part of the general flow of constantly changing narratives. Owing to the different interactions facilitated by web-based learning or computer-mediated communication, which is devoid of verbal and visual social cues, the set of meanings that emerge may be experienced differently by different individuals in the system.

As humans we are social beings that interact within a social environment with other social beings. Thus, we are born into our socialisation process, almost as tabula rasa (own emphasis). The methods and criteria that we utilise in the construction of our realities and our worlds are largely dependent on this socialisation process. This is our learning environment, on which future interpretations and decision-making will be based.

There are many systems that come into play - Ourselves, our perceptions, cognitions, personality characteristics, as well as the other members of our interacting system (the web-class system). As individuals (learners), our experiences are subjective, and differentiated, thus so too are our constructed realities. It is within these systems that the typical communication processes that we are accustomed to are established.

Through the relationships or interactions within these systems, we are attuned to the nuances of verbal and non-verbal communication patterns. These patterns are largely based on audio-visual stimuli or cues that we are able to differentiate and ascertain meaning to. As our interactional system changes, so to does the process of constructing meaning and realities within these new interactional systems. Our socialisation process is traditionally driven by audio-visual stimuli. The Internet ushers forth a new socialisation process that is primarily, devoid of the usual audio-visual stimuli. We receive in this environment visual stimuli that is purely text-based.

3.6. Concluding comments

The whole life is seen as interconnected and related (Duhl, 1983). According to second-order cybernetics, living systems are not seen as objects that could be programmed from the outside, but as self-creating, independent entities (Hoffman, 1990).

The systemic view ushers forth a world of pattern, holistic interaction, context, and circular interaction - in this world there are no lineal phenomena (Dell, 1989).
By using a non-linear approach, the global pattern of relationships, cognitions, perceptions, and behaviours that occur within a system and also sustain or maintain that system, can be effectively approached. But, this is not always an easy approach, especially for the 'unseasoned' (such as the researcher) in systemic theory. We have been conditioned into a linear mode on thinking - A causes B. The consequential feedback loop of what effect A has on B will have on A is not traditionally included in our general mode of thinking. We do not see the 'bigger picture'. This implies stepping back and looking at the whole and the feedback loops (information flow) contained therein.

The very language that we utilise is culturally embedded in this conditioning process. Thus, adopting a systemic perspective requires a change in our current mode of thinking. While it is seemingly easy to learn new concepts, it appears quite a task extinguishing or re-framing old modes of thought and meaning construction.

It is through this systemic lens that we are able to both see and understand the bigger picture. The realm of the system that is being explored is described in figure 3.b.

There are various systems involved in the web-based learning system. There is the individual system of the student - which is influenced by the course, his/her own perceptions, expectations and beliefs and physical well being; then there is supra-system of the class - consisting of the individual member systems.

The interaction between student and lecturer are significant in the experience of web-based learning, and could be construed as a different system. In the context of the class-system, each student typically interacts with another student (socially or academically) via the web, utilising e-mail as the communication medium. Interaction in this medium has effects on the communication process as well as the way in which the communication is experienced.

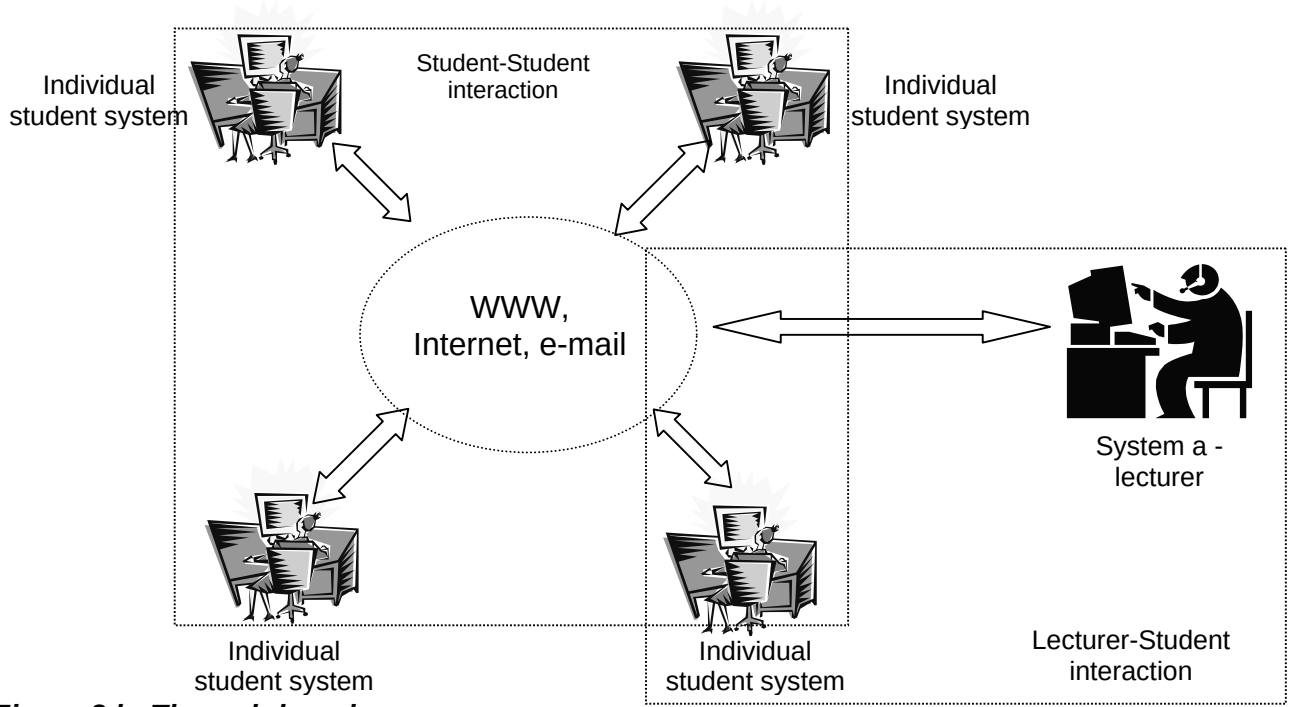


Figure 3.b: The web-learning

CHAPTER FOUR: INTRODUCING THE MAP

4.1. Introduction

This chapter describes the avenue of analysis that was employed in this research process. All aspects perceived as important in the description of the methodology choice are discussed in this chapter; thus allowing the reader to form as concise a picture as possible of the map utilised in this research process.

4.2. Aim of the study

As highlighted in chapter one, web-based instruction has ushered forth a transformation in the way in which distance learning is perceived in South Africa. In order to understand and interpret the impact of web-based instruction and its perceived potential contribution to 'bridge the distance' in learning in South Africa, exploration of how this virtual frontier is experienced by South African students is required. This would provide a better understanding of this mode of learning and communication so as to facilitate effective collaborative learning via this medium.

This study aims to explore and to offer a description of the experiences of students who encounter this virtual medium in the form of web-based instruction and computer-mediated communication. It is exploratory in nature and thus aims to highlight the experiences of postgraduate research psychology students that were registered for the web-based master's course (coursework year).

4.3. Research Design

Due to the exploratory nature of this study, a qualitative research design has been selected. Personal experiences are very subjective and individualised. Qualitative analysis thus, allows for the understanding of these rich nuances in experience and enables both a rich description and understanding thereof. This type of analysis allows for the exploration of the meanings, variations and perceptual experiences of phenomena (Crabtree & Miller, 1992).

Through this analysis, the researcher and reader are enabled to relate to the story that is threaded through the lived experiences of the respondents. This is due to the emphasis that is placed on social context in understanding the social world (Neuman, 1997). The social meaning (of an action or statement) and significance are dependent on the context within which it appears. The complex and dynamic quality of the respondents' social world is accepted (Hoepfl, 1997). There is flexibility ingrained in qualitative analysis that enables it to be altered during the process so as to allow for the most effective exploration of the phenomena under investigation.

The phenomena under exploration in this study are the experiences of postgraduate students in the interactive web-based learning environment. Through the process of qualitative research, the researcher immerses herself/himself in the data, thus discovering the meanings contained within it. This data is represented in the form of words from transcripts (Neuman, 1997).

The features of qualitative research as described by Hoepfl (1997) highlight its relevance and adoption in this study:

1. The natural setting is utilised as the source of data. Phenomena, through qualitative analysis, are understood in context-specific settings.

2. The researcher acts as the instrument of data collection (Hoepfl, 1997; Radcliff, 2002).

"You, the researcher, are in charge of making meaning, of making sense of your data"

(Ely, Anzul, Friedman, Garner, & Steinmetz, 1991, p. 140).

The researcher's role in the research process is to be involved in the research with the awareness of her/his own feelings and thoughts concerning the phenomenon being explored as well as his/her commitment to exploring each respondent's experiences without colouring them. The researcher utilises his/her "*personal insight, feelings and perspective as a human being to understand the social life under study*" (Neumann, 1997, p. 334).

The observer cannot be regarded as neutral as the research entails subjective phenomena, i.e. personal experiences, which require exploration and description. "*The self-referential observing system (the researcher and the data), through its internal transactions, brings forth or creates new meanings*" (Fiedeldey, 1995, p. 2).

3. Analysis is inductive. Categories emerge from observing and exploring the data collection (Hoepfl, 1997; Radcliff, 2002).

4. Research reports are descriptive, incorporating expressive language and the "*presence of voice in the text*" (Eisner, 1991,p. 36 in Hoepfl, 1997, p. 3)

5. The character of qualitative research is interpretative. Qualitative research focuses on discovering the meanings that are seen by those that are being researched and with understanding their view of the world.

6. Researchers concentrate on the uniqueness of each case under investigation.

7. The research design is emergent. Researchers pay attention to this emerging process and the outcomes of the research. Due to the fact that the researcher endeavours to observe and interpret meanings in context, it is neither possible nor appropriate to finalise the research strategy before data collection has begun (Patton, 1990 in Hoepfl, 1997, p. 3).

4.4. Research procedure

4.4.1. Sample

A convenience sample has been selected, i.e. a purposeful selection of respondents. The respondents required for this study have expressed their willingness to participate in this study, and as such have facilitated an accessible sample for exploration. The course director (voogdosent) was approached in order to obtain permission to contact the students involved in the Research Psychology Master's Degree course. An e-mail was then sent to each of the students explaining the research to be undertaken and requesting their voluntary participation in the study. Students were also informed that the interviews were to be audio-recorded for analysis purposes. These students then responded to the e-mail stating their willingness to participate. The researcher then liased with individual students via e-mail to set-up face-to-face interview appointments.

The sample group consists of 12 postgraduate students (male and female, aged 21+ years) studying the online MA (Research Psychology) course at the University of Pretoria.

- 6 Students that were in their second year (internship year) of the course, and had already been through the process of the web-based aspect of the course.
- 6 Students that were at the end of their first year (academic year) of the course

4.4.2. Data collection

"An interview is a conversation that has a structure and a purpose" (Kvale, 1996, p. 6).

Semi-structured personal interviews with respondents residing in and around the Pretoria region (or those that have readily access to this area) were conducted in this study. Individual interviews were conducted as these are more appropriate and useful for evoking respondents' personal experiences and perspectives (Giacomini & Cook, 2000). Semi-structured interviews were conducted, as the aim was to focus respondents on web-based learning and their experiences thereof, as well as to maintain interview duration, whilst eliciting as detailed information as was possible regarding the student's experiences of this learning medium. Interview duration varied from 30 minutes to 45 minutes.

The respondents, i.e. students, were at the beginning of the interview reminded of the aim of the research study and that the interview was to be audio-recorded. The researcher explained to each respondent the need for audio-taping of the interview, i.e. to enable better interview flow; to enable the researcher to recall information that may not have been accurately noted down during the course of the interview, and to also provide a detailed script for qualitative analysis. After this explanation, respondents were assured of the confidentiality and anonymity of the interview, and permission for audio recording was asked again prior to the commencement of the interview. It should be noted that owing to the fact that these respondents were research students they were aware of the need for audio-recording during in-depth interviews and were thus not averse to this.

The aim or purpose of the research interview was to explore and obtain descriptions of the lived world (experiences) of the respondents so as to interpret and ascribe meaning unto the described phenomena. The qualitative interview is semi-structured in the sense that it utilises open-ended questions that allow for the expression of individual variations. Thus, there exists no pre-determined responses, only predetermined inquiry areas (semi-structured interview), and the interviewer is afforded the freedom to probe and explore within these areas (Hoepfl, 1997).

The interviews were audio-recorded and then transcribed verbatim. The transcripts formed the ingredients for the qualitative analysis. Audio-recordings have the advantage of capturing the data more accurately than hand written notes. Thus, the researcher is afforded the opportunity to focus on the content of the interview being conducted (Hoepfl, 1997).

4.4.3. Data analysis and interpretation

"The product of analysis is a creation that speaks to the heart of what was learned"

(Ely et al, 1991, p. 140).

Qualitative analysis involves the extraction of themes or generalisations from data collected and arranging or organising this data in such a manner, that it presents both a coherent and a consistent picture. A qualitative researcher must organise and interpret their data in manner wherein another researcher could follow what was done and could also see correspondence between the data collected and the findings interpreted (Giacomini & Cook, 2000). This does not imply that the 'other' researcher would come to the exact same interpretations, as interpretations are at

the very core subjective; but that the other researcher can gain a clearer understanding of the interpretations drawn.

Data is organised into manageable units, synthesised, and patterns contained within this data are searched for (Bogdan & Biklen in Hoepfl, 1997, p. 5). Thus, the focus of the qualitative researcher is the subjective meanings, definitions, metaphors, symbols and descriptions of specific instances. Data that is in the form of words (including quotes or descriptions of particular events) is interpreted by assigning meaning to it (Neuman, 1997). This meaning is somewhat coloured by the researcher's theoretical lens as well as the understandings that have emerged during the analysis and interpretation process. The data collected allows the researcher to observe as clearly, as is possible, the social interactions and/or behaviour that is being sought to describe

Neuman (1997) asserted that qualitative research is cyclical and as such less linear. A cyclical research path allows the researcher to collect new data and gain new insights with each cycle or repetition. This cyclical, non-linear qualitative research path can be quite effective in creating a feeling of the 'whole', for allowing for the grasping of subtle meanings, for bringing together divergent pieces of information and for switching perspective.

The systems qualitative analysis (adapted by Fiedeldey, 1995, p. 6 from Groenewald, *in preparation*) that will be utilised in this study involves three levels or orders of analysis.

4.4.3.1. First-order analysis

The first-order analysis centres on exploration - a description of individual experiences. It involves the acknowledgement of the researcher's epistemology; a familiarisation with the subject matter (while noting the influence of one's epistemology); creation of different meaning (meaning units), and formulating temporary theory-driven descriptors; finalisation of these descriptors in a systemic framework (supported by relevant literature); and finally, establishing stability and consensus.

This involves the experiential mapping of each respondent's transactions with the phenomenon. The manner in which the respondent interacts within the web-based learning environment is described. Patterns from these different experiences are identified. These patterns or regularities are further classified into experiential categories, which are located within the reference frameworks of the individual respondent, as punctuated by the qualitative researcher. These experiential categories form the first level or order of analysis. Table 4.a is an illustration of the beginning of first-order analysis, i.e. the creation of meaning units in order to develop experiential categories. These are represented as phrases.

4.4.3.1.1. Example of First-Order Analysis

a) An illustration of the identification (creation) of meaning units

The numbers in brackets alongside each meaning unit indicate the category into which the meaning unit was situated. These meaning units are not regarded as being absolute as they emerge during interaction between reality and the observer (Cassimjee, 1998).

Table 4.a An illustration of the identification (creation) of meaning units: Students' responses to Web-based learning.

Web-based learning	Meaning unit
Freedom to work from home, and at times that suited me	[1] Work from home [1] Flexi-time (learning/working) [1] Independent learning/working
But with Internet time and place is not really of much significance any longer	[3] Transcendence of physical distance
I remember being quite excited about the prospect of using the Internet to do the course	[8] Excitement projected at novel medium

Additional meaning unit identification analysis is included in Appendix B.

b) Developing experiential categories - an illustration

Experiential categories are developed by grouping together meaning units based on their content (Cassimjee, 1998). The example provided below is based on physical aspects of web-based learning.

EC1: Facilitation of flexible and independent working/ learning

In this category statements pertaining to the flexibility of time (time-management) were included. These statements reflect both to the facilitation of independent working promoted through this time flexibility, but it also highlighted the impediment of independent working on improper or poor time management ability.

1.1. Flexible working/ learning time

Statements pertaining to this unit focussed on the affordance of flexibility of time for both learning and non-learning activities

1.1.1 Flexible time available (includes more time available)

- "Freedom to work from home, and at times that suited me"
- "Freedom to arrange my daily program as it suited me"
- "I expected it to be like distance…part-time, flexi-time"
- "I could work on my own time"
- "More time for leisure pursuits"

1.1.2. Work from home

- "Freedom to work from home, and at times that suited me"
- "Thought I'd stay at home an work"

1.2. Fostering of independent learning

These statements revolved around the fostering and impediment of independent learning.

1.2.1. Independent learning promotion

- "Freedom to work from home, and at times that suited me"
- "I did not expect a difference, except for working on your own"
- "…working on your own - more like a UNISA set-up"
- "…allows people to think independently"

1.2.2. Discipline and motivation towards time management

- "I could work on my own time"
- "so that I can learn in my own time"
- "Jy leer om op eie twee voete te staan, in terms of having to do your own thing"

1.2.3. Poor-time management ability

- "I thought it would be easier, working when I wanted to"
- "expectations of working at my own pace, they weren't (met)"
- "I'm not as productive at home as I am on campus"
- "You may find it difficult to motivate yourself"
- "I think time-management for me was a problem"

4.4.3.2. Second-order analysis

Second-order analysis is primarily concerned with the description of shared experiential categories. It allows for the development and description of pattern codes, a representation of pattern categories, and a determination of the acceptability of these pattern categories. Experiential categories of each respondent are compared so as to emphasise the manner in which the individual categories are connected to a larger whole.

These descriptions of shared experience allow the researcher to create a pattern of ideas and experiences. The shared experiences are these pattern categories. The patterns identified by the researcher are now further connected to form a whole, a "pattern of patterns" (Groenewald in Fiedeldey, 1995, p. 4).

4.4.3.3. Third-order analysis

The Third and final order of analysis is focussed on explanation - answering the "why?" question by describing the pattern of categories, i.e. creating conceptual categories.

Explanation in creating the conceptual categories entails a further reduction of the information at hand. Through this further reduction of information, new understanding is provided. This level entails the third-order description, which represents the researcher's punctuation of the phenomenon under exploration. The data undergoes further systemic transformation during analysis by the researcher. The researcher

reveals the story that has unfolded to him or her. Figure 4.a, illustrates the aspects contained in the systems qualitative analysis (page 81).

"The data cannot speak for itself. The self-referential observing system (the researcher and the data), through its internal transactions, brings forth or creates new meanings"

(Fiedeldey, 1995, p. 3).

4.4.4. Framework for interpreting and conducting research

The systemic approach has been selected as the theoretical framework for the interpretation of the data in this study. This approach provides the lens with which to obtain a holistic perspective of the phenomena under investigation.

As mentioned in chapter three, a systems perspective allows for the conceptualisation and inclusion of all relevant aspects of a person's interactional system. It allows the researcher to see the processes and patterns involved in a person's interactional system. Web-based environments include novel computer-mediated transactions (in terms of communication patterns).

These computer-mediated transactions involve a non-verbal communication process that occurs via the written word (language-based). Although we are referring to the written word, the medium of communication and thus interaction is different. The medium through which this is accomplished imposes 'novel' demands in terms of how one conceptualises time, space, territories (virtual), boundaries, closure, etc. in this interactive web-based learning environment.

The second-order analysis process in systemic theory allows the researcher to go beyond seeing only the computer-mediated transactions. It allows for the investigation in to how these new transactions and interactional process impacts on a person's interactional subsystems. In this manner, the researcher can ascertain the patterns involved in these processes both between and within the person's various interactional subsystems. How do these new computer-mediated transactions impact on the person's other social 'live' transactions?

Through exploring a person's experience in this web-based learning environment, a perspective may be obtained with regards to an impact (if any) on the person's interactional subsystems, e.g. family or friends or classmates, etc.

The system required for exploration has already been defined: the learner (Postgraduate student) in an interactive web-based learning environment. What happens within this system is of importance: what does this new experiential world entail for this learner? How does the learner experience these computer-mediated transactions? This perspective also allows for the researcher-subsystem in the research process.

Figure 4.a. (An ecosystemic rationale for the steps in the transformation of experiential data, Fiedeldey, 1995, p. 3) illustrates the aspects contained in the systems qualitative analysis.

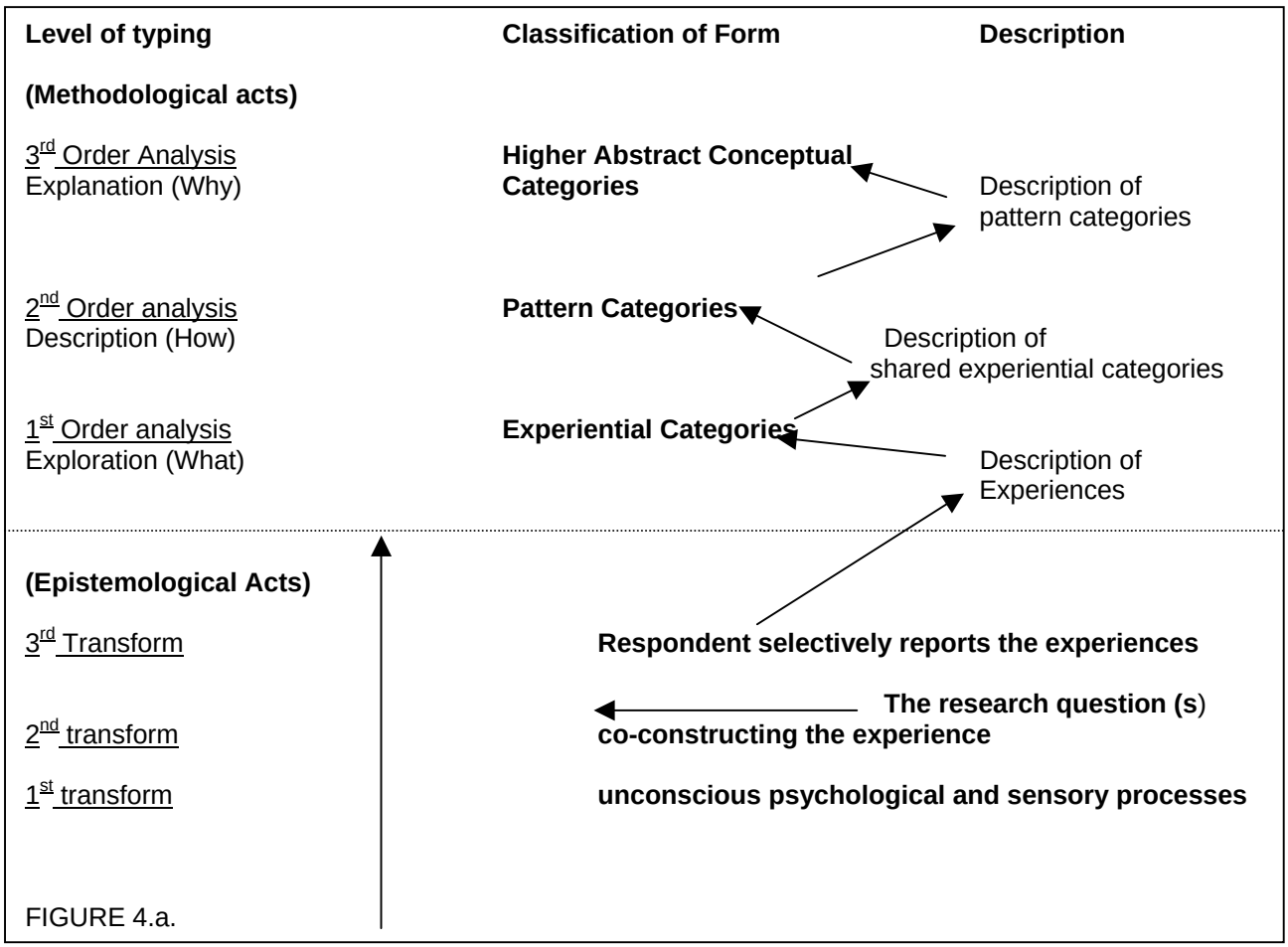


FIGURE 4.a.

4.5. Data Validity & Reliability

One of the main advantages of qualitative research, i.e. its subjectivity or use of subjective information, inherently generates a disadvantage. This subjectivity renders difficulties in establishing reliability and validity of the data collected (Key, 1997). These difficulties arise from the quantitative definitions of the two terms. Validity in qualitative research is however, vastly different from that in quantitative research.

"An account is valid or true if it represents accurately those features of the phenomena, that it is intended to describe, explain or theorise"

(Hammersley, 1987, p. 69 in Winter, 2000)

Research into the lives, personalities and experiences of people inevitability involves contradiction and the existence of parallel and opposing truths within accounts observed by different researchers. However, in order to 'clean' data of such personally oriented discrepancies would involve further subjective action, as it would involve a degree of selection and choice (Winter, 2000).

Validity in qualitative research can be maintained in the following way (Key, 1997 & Radcliff, 2002):

- Be a listener

  → The respondents should provide majority of the input. The researcher's task is to guide the interview and interpret the responses collected in a responsible manner.

- Record accurately

  → Records must be maintained in either the form of detailed notes or electronic recordings (audiotape or videotape)

- Initiate writing early

  → Key's suggests that the researcher compile a rough draft of the study before fieldwork commences so that the researcher is primed for the recording of data and is able to focus better on the process of data gathering. It is vital to conduct depth primary research (including reviewing literature and theoretical stand point) prior to data gathering so as to enable the researcher to contextualise the data. The researcher prefers to use the word 'primed' loosely – in the sense that information in the interview reveals itself. In exploratory research making assumptions before hand may hinder the recording of important experiences.

- Include the primary data in the final report
  - → By including primary data in the field report, the reader is able to on what basis the researcher's conclusions were made. This is where the literature review included in the report is important.
  - → Convergence with other data sources - When this is applicable it would involve comparisons with the literature.

- Include all the data in the final report
  - → All information should be provided - That which the researcher is unable to interpret should not be kept out of the report. This is to afford the reader the ability to form his/her own conclusions about the uninterpreted information.

- Be candid
  - → Whilst the researcher is to attempt to remain as neutral as is possible, where there are instances wherein the researcher's feelings are relevant to the particular piece of information being discussed, these should be revealed. However, revealed in a responsible manner.

- Seek feedback
  - → The researcher should allow professional colleagues and/or respondents to critique the research manuscript so as to ensure that the data collected is reported accurately and as completely as is possible. This is more than just proofreading of the research report.

→ Independent checks by multiple researchers - This is relevant to team research, i.e. where there are other researchers working on the same project.

→ Member/Respondent checks - The researcher returns to the respondents after the study and checks the accuracy of the research findings.

- Attempt to achieve balance

  → Whilst seemingly difficult to adhere to strictly, balance is important. The researcher should try to maintain a balance between actual importance and perceived importance.

- Write accurately

  → Incorrect grammar, incorrect spelling, statement inconsistencies, etc., jeopardise the validity of an otherwise good study.

"A valid account must respect the perspective of the actors in that situation"

(Maxwell, 1992, p. 290 in Winter, 2000)

Guba (in Keys, 1997) describes four criteria that are utilised in the evaluation of research and proceeds to define each criterion from both a quantitative and a qualitative perspective. This is included in table 4.b (below and continued overleaf).

Table 4.b Assessment of Trustworthiness: Guba's model of research evaluation.

Criterion	Qualitative Perspective	Quantitative Perspective
Truth Value	Credibility • E.g. Member checking; Peer examination; Interview technique, etc.	Internal validity
Applicability	Transferability • E.g. Nominated sample; Dense description, etc.	External validity
Consistency	Dependability • E.g. Dense description of research methods; Peer examination; Code-recode procedure, etc.	Reliability
Neutrality	Confirmability • E.g. Confirmability audit; Triangulation, etc.	Objectivity

Reliability in qualitative research can be established by either the same researcher or different researchers in the following scenarios (Radcliff, 2002):

- Multiple viewings of videotapes
- Multiple listenings of audiotapes
- Multiple transcriptions of audiotapes

In any of the cases mentioned in Table 4b, it should be noted that reliability would probably be high. High reliability may suggest that there is some sort of bias present or at work in the data. A bias shared by a team of researchers or across various observations made by the same researcher facilitates this high reliability. It based on this premise that in many studies qualitative researchers emphasise validity as opposed to reliability (Radcliff, 2002).

4.5.1. Researcher integrity

The role of the researcher as an instrument of data collection can create question to the validity of the data. It is the role of the researcher, irrespective of the emic (participant-observer) or etic (outsider) stance that is adopted in the research process, to maintain honesty and be as objective as possible without losing an empathic relation to the research being conducted. The integrity of the researcher to be honest and fair unto herself/himself and the research process is crucial, and to acknowledge the scientific responsibility that the researcher accepts in the research process to provide authentic data (Kvale, 1996).

An assumption made by qualitative researchers is that it is almost impossible to negate the effect of the researcher completely. However, this does not necessarily constitute the researcher introducing a bias into the study. In qualitative research, the researcher does acknowledge his or her values and/or assumptions, however he or she takes the responsibility not to utilise this awareness to create a bias into the study (Neuman, 1997).

Validity in this study was maintained in the following approach:

- Truth Value:
  - Strong active listening during the interview, and also during multiple listening to the audiotapes at different time periods. This was done so as not to colour what was listened to from one interview to the next.

- Applicability and Consistency
  - Audio-recordings of each interview (including transcripts) were maintained.
  - Depth primary research was conducted prior to interviewing to facilitate contextualising the research study. Some of the information explored, and that was relevant to the research study have been provided in the literature review.
  - Accuracy in writing was maintained as far as is possible – proofing and re-checking data and information was conducted at different intervals. Data does not always reveal itself in the same way on different occasions - more often there is something new or different shown

4.6. Concluding remarks

It is believed that the systems qualitative analysis best fits with the researcher and the aim of the study. It is flexible enough to both acknowledge and bring to the fore all aspects of the respondents' experiences within this web-based learning environment, and to allow for the analysis of the patterns contained therein. The methodology is flexible to change, should the need arise. It creates an optimum map for the adventure of exploring the life world of the respondents as far as their experiences within a web-based learning environment are concerned.

CHAPTER FIVE: THE EXPLORATION - RESEARCH FINDINGS

5.1. INTRODUCTION

This chapter culminated from the analysis of the interviews conducted with the respondents who voluntarily participated in the study. Categories of experience and patterns thereof that were prevalent in the exploration of the experiences of learners in the web-based learning environment have been extrapolated.

5.2. BASIC FINDINGS OF STUDY

Experiential categories extracted from this research study are described and elaborated within the context of the web-based learning environment as well as the web-based MA (Research Psychology) course-work year. The experience of the course-work year coloured much of the way in which the web-based learning environment was experienced, and as such the course itself constituted an experiential category.

The course itself was not purely web-based. Students engaged in much offline (physical) contact with both classmates and lecturers. The course design facilitated this dualistic mode of learning. At the outset, it is apparent that this was a web-based course that was supplemented with offline classes/ workshops.

5.2.1. Experiential categories

In taking cognisance of the spectrum of statements that comprised the various experiential categories, both positive and negative responses were grouped within the relevant category. Positive response refers to statements pertaining to aspects that fostered and/or promoted interacting in a web-based learning environment, these include statements that refer to advantages of this type of learning environment. And conversely, negative responses can be construed as statements relating to barriers and aspects that hindered these interactions and were perceived as disadvantages of the web-learning process. Depending on the individual's perspective, certain responses can either be viewed as positive or negative.

5.2.1.1. EC1 - Facilitation of flexible and independent working/ learning

In this category statements pertaining to the flexibility of time (time-management) were included. These statements reflect both to the facilitation of independent working promoted through this time flexibility, but it also highlighted the impediment of independent working on improper or poor time management ability.

1.1. Flexible working/ learning time

Statements pertaining to this unit focussed on the affordance of flexibility of time for both learning and non-learning activities

1.1.1. Flexible time available (includes more time available) (*Positive*)

- "Freedom to work from home, and at times that suited me"
- "Freedom to arrange my daily program as it suited me"
- "I expected it to be like distance…part-time, flexi-time"
- "I could work on my own time"
- "More time for leisure pursuits"

1.1.2. Work from home (*Positive*)

- "Freedom to work from home, and at times that suited me"
- "Thought I'd stay at home an work"

1.2. Fostering of independent learning

These statements revolved around the fostering and impediment of independent learning.

1.2.1. Independent learning promotion (*Positive*)

- "Freedom to work from home, and at times that suited me"
- "I did not expect a difference, except for working on your own"
- "…working on your own - more like a UNISA set-up"
- "…allows people to think independently"

1.2.2. Discipline and motivation towards time management (*Positive*)

- "I could work on my own time"
- "so that I can learn in my own time"
- "Jy leer om op eie twee voete te staan, in terms of having to do your own thing"

1.2.3. Poor-time management ability (*Negative*)

- "I thought it would be easier, working when I wanted to"
- "expectations of working at my own pace, they weren't (met)"
- "I'm not as productive at home as I am on campus"
- "You may find it difficult to motivate yourself"
- "I think time-management for me was a problem"

5.2.1.2. EC2 - Technical arena of web-based learning

Statements in the second experiential category of the technical arena of web-based learning refer to the technical skills required to pursue this type of learning as well as some of the technical hindrances (in terms of infrastructural problems) that were encountered.

2.1. Initial acquisition of technical skills (*Positive/Negative*)

- "I think I needed, should have found out more things before hand"
- "I might have been a bit concerned about being appropriately prepared for the medium of the Internet"
- "I was worried about getting on to the server"

2.1.1. Technical barriers (*Negative*)

- "Log on problems, as it throws you off (chat room)"
- "Waiting to download information is a schlep"

2.2. Improvement and enhancement of technical skills (*Positive*)

- "My main expectation was to improve myself, my skills, my knowledge"
- "I did not think that it would affect my life in any major way, to me it was very much an increase in computer skills"
- "I thought that I'd finally get the technology, improve my computer skills, connect with people."
- "I found my learning curve moving beyond the course to learning about using the computer in a highly effective way"
- "It improved my computer skills very, very much, that is really one of the great advantages."

5.2.1.3. EC3 - Accessibility of medium to foster learning and communication

Experience category three comprises of statements that refer to the medium of web-based learning fostering learning and communication. This category looks at physical distance being conquered, ease and convenience of accessibility as well as cost (telephonic) being a hindrance.

3.1. Transcendence of physical space(*Positive*)

- "But with Internet time and place is not really of much significance any longer"
- "(Person-to-person across a distance) yes, that's even better or more of an advantage because you don't have to drive all the way to the person"
- "It's experience that you can get anywhere over the world across the boundaries of colour and race"
- "It makes the world relatively small, you can actually now study anywhere. One can also get to know people very well on an individual level."

- "The fact that you can reach a lot of people with it, with one instrument a lot of people can learn"

3.2. Convenient and easily accessible (*Positive*)

- "Expected that everything would be easier, convenient."

3.3. Cost-intensive (*Negative*)

- "Costs a lot of money to be online all the time"
- "It sends one's telephone bill through the roof!"
- "You have to think of the telephone bill, you're not compensated"

5.2.1.4. EC4 - Student's world of social interaction

This category looks at the realm of social interaction that a student is exposed to and may also desire or lack, both offline (personal / face-to-face) and online

4.1. Online social interaction

4.1.1. Promotion of online social interaction (*Positive*)

- "(Social support via the web) E-mail them regularly to keep up to date"
- "It's important to form a relationship with them (classmates) to understand them"

4.1.1.1. Increased online social interaction (*Positive*)

- "I thought that I'd finally get the technology, improve my computer skills, connect with people."

- "Just going on the Internet and you know there's always something new and something nice. Did anybody send me a message? What did they say? You know that kind of thing."
- "It makes the world relatively small, you can actually now study anywhere. One can also get to know people very well on an individual level."
- "The fact that you can reach a lot of people with it, with one instrument a lot of people can learn"

4.1.2. Positive interactions with classmates (*Positive*)

- "It was excellent (classmate interaction)"

4.1.3. Feedback is important (*Positive*)

- "In order to build a relationship, definitely because that is the only way to interact with the person or otherwise you just talk to yourself (feedback from message recipient)"

4.1.4. Online contact different from personal (*Positive/Negative*)

- "There are certain aspects of human interaction that cannot be replicated through web-based interactions"

4.2. Offline (personal) social interaction

4.2.1. Promotion of personal contact

4.2.1.1. Increased personal interaction (*Positive*)

- "I really thought that I would have a social life for a change. Seeing more people, going out…"

- "I expected that I'd be there when my boyfriend came home from work "

4.2.1.2. *Decreased personal interaction* (*Negative*)

- "The amount of work and stuff like that - yes, obviously affected my life socially and emotionally"
- "Socially, I almost never went out this year because there was never time"
- "There were definitely pressures (academic) and it definitely impacted on my social life in some way or another"
- "Affected my relationship with my boyfriend"

4.2.1.3. *Transfer of online relationships offline* (*Positive*)

- "Ja. Which is nice and strange. 'cause usually out of my own experience, if you don't know somebody beforehand ad you never had any physical contact, contact with that person ever, you communicate over e-mail"

4.2.1.4. *Appreciation of personal contact* (*Positive*)

- "It's (computer) given me this feeling that I can connect to people, but at the same time it's made me appreciate people contact."

4.2.2. Desire / need for personal contact (*Positive*)

- "I also think that you need to see people and have personal contact"
- "I really feel that it is different because I am speaking to somebody that I know out of her e-mails, but I would really love to see her face-to-face."
- "Social contact is important as an enhancement to web-based learning"
- "You know like if you have those little cameras where you can see each other? if we had that resources, I mean, face-to-face, whenever you want to

speak to each other … No it's not important, not important at all, but, mean the problem is not seeing each other"

4.2.2.1. Feeling isolated/ alienated (*Negative*)

- "I would really feel restricted (without personal contact)"
- "I think that I would feel alienated (without personal contact). You need to talk to the lecturers and interact"
- "You may feel isolated without the regular social contact with fellow students."
- "Maybe that you are restricting the person to person contact, even though there are people involved."

4.3. Existence of social cues in message (*Positive/Negative*)

- "Very because people are important and Even though computers are a large part of our lives one cannot ignore the people."
- "(Emotion In the message) Yes I think it is very, very important because the person affects you a lot"
- "You know like if you have those little cameras where you can see each other? if we had that resources, I mean, face-to-face, whenever you want to speak to each other … No it's not important, not important at all, but, mean the problem is not seeing each other"

5.2.1.5. EC5 - Creating of new learning and communication gateways

This category of experience takes into account the gateways of learning and communication that are facilitated via use of the web.

5.1. Opened new avenues (learning) (*Positive*)

- "Expected to only learn research"
- "The way in which the course facilitated my personal growth far exceeded my expectations"
- "Using the Internet opened up an entire new world for me."
- "It exposed me to a new world"
- "It made me realise that there is a growing world outside that I would never have been exposed to"
- "I think its amazing. I think there is a lot of opportunity for learning and also for development"
- "Especially the Internet it is a whole new world."
- "It opened my eyes and it have me life to a new horizon"

5.2. Open to new experiences and change (*Positive*)

- "I saw learning about the Internet and e-mail as a natural transition in my life."
- "I was absolutely petrified, but I was also prepared to learn."
- "Don't be afraid to take a step, don't be afraid to learn"

5.2.1.6. EC6 - Academic influences on web-based learning experience

Owing to the fact that the students involved in this research study had embarked on a master's course, the academic pressures entailed in this course form a category of experience that is a factor in their experience of both the course as well as the medium of instruction.

6.1. Academic pressure (*Positive/Negative*)

- "It was more about getting motivated to get the right mind set, to get organised and as I have said to handle the pressure."
- "The amount of work and stuff like that - yes, obviously affected my life socially and emotionally"
- "You had to work hard (in the course)"
- "Socially, I almost never went out this year because there was never time"
- "There were definitely pressures (academic) and it definitely impacted on my social life in some way or another"

5.2.1.7. EC7 - General experience of web-based learning

General comments and attitudes towards web-based learning form the seventh experiential category. Aspects of addiction to the medium, in terms of facilitating social interaction were also included.

7.1. **Positive attitude directed at medium** (*Positive*)

- "I remember being quite excited about the prospect of using the Internet to do the course"
- "I am really enjoying it"
- "I have a strong preference to this (WBL). I think that it can work very well."
- "I think it can be an excellent medium (WBL)."
- "Excellent comes to mind (WBL). Which is a contradiction because this course wasn't really excellent"
- "I think a far more effective way of learning"
- "I think its amazing. I think there is a lot of opportunity for learning and also for development"
- "It's experience that you can get anywhere over the world across the boundaries of colour and race"

7.2. **Addiction o the medium** (*Positive/Negative*)

- "I have to sit in front of the computer everyday otherwise I feel that something is missing"
- "Just going on the Internet and you know there's always something new and something nice. Did anybody send me a message? What did they say? You know that kind of thing."

5.2.1.8. EC8 - The world of the web-based MA course

As previously mentioned experience of the master's course coloured much of the experience of the medium of web-based learning. This eighth category of experience includes statements pertaining to the course content and presenters, as well as students' suggested improvements to the course to promote learning within the course via the web-based medium. Feedback from course presenters via the web emerged as quite important as the extent and regularity thereof either promoted or hindered (frustrated) the experience of web-based learning (within the context of the course). Commitment to feedback from course presenters was warranted.

8.1. Continuous feedback from course presenter (*Positive*)

- "To have like a kind of a business, professor-student relationship with him on the web, 'cause he always answers you back, he always talks to you over the web. He's not (uncomfortable) with working in that way."
- "Every time you sent something he replied. He responded immediately"

8.2. Irregular feedback from course presenter (*Negative*)

- "For instance, () you can send her… you can mail bomb her and she still world not reply"
- "'XX' never responded. 'XY', I don't think she read her e-mail"
- "They all responded, sometimes after two days. I felt irritated because they are supposed to communicate via e-mail. They are supposed to be there."

8.3. **Negative associations towards course** (*Negative*)

- "Only a few classes were Internet based. Sometimes we had to come in. I felt irritated. I expected never to come in."
- "Excellent comes to mind (WBL). Which is a contradiction because this course wasn't really excellent"
- "Negative experience, feelings…not of web-based learning but because of the course. It wasn't completely web-based."
- "The feelings of the course, colour the way in which I feel about the (WBL)"

8.3.1. Commitment warranted from course presenters (*Positive / Negative*)

- "Also, if lecturers are not committed to a web-based course, the whole thing can easily grind to a halt."
- "I think the effectiveness of a course depends more on the content (and the lecturers!) Than on the medium."

8.4. **Course-improvements** (*Positive)*

- "Some components of the course (e.g. research methodology) could have been better structured."
- "Well, In the first place the lecturers have to be more experienced with the Internet, communicating over the Internet and the programming on the Internet has to be much better - more interactive, more information has to be put on the web. More resources, more links to resources."
- "More interactive…not… it doesn't have to be nice to look at or anything like that, but it has to be more interactive."
- "Everything should have been done on the web."
- "Preferred CD with the required information at the outset of the course."

5.2.1.9. EC9 - Guidelines for web-based learners

Through their experience with web-based learning and the master's course, the students (respondents) had a few guidelines available for future web-based learners. Whilst not an experiential category on its own (in the true sense of the concept), it was borne out of the student's experiences.

9.1. Preparation/ recommendation for web-based learning (*Positive)*

- "Learn to use e-mail"
- "Learn how to surf"
- "Learn how to do searches on the Internet for academic purposes "
- "Go on to chat rooms and learn the culture because it's a totally new culture which people are not usually used to."
- "Less commuting time, more time for other things. You may feel isolated without the regular social contact with fellow students."
- "You should definitely be computer literate"

5.2.1.10. EC10 - Communication via e-mail

Statements pertaining to communication via e-mail (and the experience thereof) formed the content for the tenth experiential category. Comfort with and preference for this communication medium were included as well as the constant search for social cues (need thereof) within this communication medium.

10.1. Increased comfort in communication via e-mail (*Positive)*

- "I will increasingly in future only communicate with other people through Internet, it is far easier and in every way more convenient for me."
- "It's good (e-mail), you need this type of communication. It's sort of convenient to e-mail."
- "I think that the freedom of the Internet of… nobody else seeing you and having control over the other person because although you don't actually…have control (have control over who you portray on the Internet allows freedom of expressing yourself)"

10.1.1. Promotion of social interaction (*Positive)*

- "It enhances relationships (e-mail"
- "We really came closer even though it was through e-mail"

10.1.2. Freedom of expression (*Positive)*

- "(Can be) more personal because there's no physical contact. More free to say something, feel more comfortable to say something"

- "If it's somebody I don't know, or know to a lesser extent, I'll say I actually… I'm more open to that person. I would say more about myself. I would be more myself."

10.2. Easier and convenient mode of communication (*Positive)*

- "I will increasingly in future only communicate with other people through Internet, it is far easier and in every way more convenient for me."
- "Much more convenient (e-mail). More time to think (e-mail)"

10.2.1. Effective online communication problematic (*Negative)*

- "Typing rather than speaking is a problem for people"
- "Sometimes it was frustrating to have to wait for answers on questions or if nobody replies to an input which I thought was good."

10.3. Social cues contained in e-mail

10.3.1. Lack of and need for social cues (*Positive/Negative)*

- "It was not understanding what the other person was saying"
- "People felt that they had to clarify things in the message, because it's first time on e-mail, therefore longer"
- "Very because people are important and Even though computers are a large part of our lives one cannot ignore the people."
- "That's the problem with e-mail. On the telephone, the person can hear that you're not being sarcastic or rude. On e-mail you can't always see (tell)."
- "They can interpret the message wrong (e-mail)"
- "Put a smiley face at the end (interpreting message so as not to offend)"
- "You have to know someone before you can understand their message"

- "Because you know them (personally) you understand their message"
- "I learn their writing styles (know who wrote it). Each one has their own style"

10.4. Positive towards e-mail communication

10.4.1. Preference for e-mail communication (*Positive/Negative)*

- "It's cheaper to e-mail and to keep in touch with people"
- "We mostly used e-mail. I preferred e-mail."

5.3. STUDENT'S EXPERIENCE OF WEB-BASED LEARNING

As mentioned the web-based (partial) master's course coloured the experience of web-based learning; thus elements of the course will filter into discussions regarding the experience of this interactive learning medium.

5.3.1. Technical arena of web-based learning

5.3.1.1 Affording accessibility and convenience

Students all carried the expectation that in embarking on this web-based course, they would have greater time available to themselves. Many expected to work from home and attend less class (physical) and also expected to engage in less personal interaction with fellow classmates and lecturers. These students had prepared themselves for independent study, i.e. a type of learning process wherein they could structure their study schedules around their lives.

These expectations could be related to what learners had read and heard about web-based learning. It was expected to be more like distance education, like part-time studies. It is believed that these students negated to acknowledge, to an extent, that they were embarking on a web-based course, but that it was still a full-time Master's degree course.

Related to this expectation was the belief that there would be no negative impact on their social/ personal lives. There is not strong clarity that this impact resulted from engaging in a web-based course, it is more apparent however, that this was the consequence of the course content and design. Students did not anticipate making many changes, if any, to their lives to adjust to this new medium of learning. This could be construed as a naïve stance. However, this appears to be associated with lack of information or understanding of the specific journey that they were to embark upon. This was a medium that was new to many of these students.

Respondents felt prepared for the course from a time-management level. It appears that this was their most important focus or perceived benefit when faced with the prospect of embarking on a web-based course. Few respondents expressed anxiety at this prospect. Most students revelled more in the excitement of embarking on this process of learning. It was quite novel to most respondents.

Students expressed mixed reactions to their feelings of preparedness for embarking on this journey. This was primarily based on the expectations of the course. All students were well acquainted with the fact that they were to study a Master's degree course, and that from an academic perspective, aspects would be different. Few

respondents expressed some anxiety to having the required computer skills available.

5.3.2. Social interaction in web-based learning environments

5.3.2.1. The need or search for personal contact

Respondents demonstrated mixed expressions to the amount of personal interaction that was warranted in the context of this course. Owing to the socialisation process and the inherent human need for social cues to interpret behaviour and understand people, students felt the need to 'meet' to physically interact. There were some that preferred much less personal interaction. This could however be related to personalities. Personality studies are not a focus of this research and thus this perspective is primarily observer-related and speculative.

The need for personal contact is mainly a social one. Respondents telephone each other or meet in person. Students have expressed a greater need for personal contact with each other than with lecturers.

As mentioned earlier, personal contact with lecturers was felt to be quite important in the statistics module. Some respondents held the belief that you could not truly study this subject online.

Many respondents expressed feeling comfortable communicating via e-mail. One respondent despite feeling this way felt that the use of video footage would enhance

the communication process. This however reaffirms the need of the student for audio-visual social cues, even if it is on a subconscious level.

Owing to the fact that computer-mediated communication and web-based learning are new concepts to most of the students it is understandable that they rely on traditional interpretation processes and rely on traditional socialisation cues.

5.3.2.1.1. Keeping 'me' in the message - need for social cues

This aspect of social interaction looks at the need for retaining a social identity in the computer-mediated communication, i.e. via e-mail.

Both senders and recipients are engaged in this process. Recipients attempted to put faces and emotional connotations to messages (some sort of visual and audio cues) - to fit an e-mail message with a picture of the sender. Senders, on the other hand, attempted to 'keep themselves' in their communications. The use of language and emoticons (smileys) comes out strongly. Respondents sometimes kept messages short and to the point, but used smileys, greetings and comments to keep the message 'alive'.

Student's personal writing styles that were revealed in e-mail communication also revealed social characteristics of the person (this aspect will not be explored as it falls outside the realm of this thesis). This highlights that as much as different people have different ways of verbally expressing themselves, they have different ways of

non-verbally expressing themselves. Their verbal expressions or verbal manner of expressions were to an extent transferred to their online communication style.

This keeping me in the message theme was reinforced through the personal contact engaged in off-line. Respondents were neither new nor strange to each other anymore. They now had a name and a face to put to the message.

Consequently, they were thus able to visualise the sender when reading the message, and were privy to known social cues about the person that aided them in interpreting the contexts within which the message was sent.

5.3.2.1.2. You have mail: addiction towards medium / craving for social interaction

There was some expression towards experiencing anxiety and excitement towards receiving e-mail. Students expressed strong anticipation prior to logging on to the Internet.

Having e-mail signified that their fellow-students and lecturers had sent communications. Respondents could pick-up on discussions taking place. E-mail connected the students to each other when there was no personal contact. It kept the communication process going. The interaction was kept continuous.

A caution expressed here by a few respondents, was the potential of receiving destructive computer viruses via e-mail.

5.3.3. Web-based learning can be a positive experience

The systems thinking module generated encouragement and a positive out look towards web-based learning. Despite encountering problems with the course, poor time management skills, problems with the programming of WebCT, students, generally, were positive towards this new learning process. It was this optimism that encouraged them to recommend (with some reservation) web-based learning to future students. For many students, this process revealed a new world to them. The skills that they acquired and the skills that were enhanced in this environment were perceived to be highly valuable. It is situated in this that these students perceive a light in the horizon for the future of web-based learning.

5.3.4. Master's web-based course

5.3.4.1. The web-based course bore little resemblance to the brochure

Students expressed much frustration and irritability towards this aspect. They had mentally (psychologically) prepared themselves for a certain process and the reality of this process was quite different.

The expectations of not attending class and working independently were not met. Having more available time was not a reality. There were two scenarios that were revealed:

1. This was a master's course that was highly intensive regarding subjects and workload. This was owing to the fact that it was a full-time study course, even though it was web-based.

2. There was too much emphasis placed on offline learning, i.e. attending classes and workshops. It was noted that the students themselves, owing to academic requirements, requested some of the workshops.

Students were somewhat divided on the issue of class attendance. For example, the statistics course, coming to class or having workshops was deemed a necessity. This perception was primarily related to course design. Apparently, what was made available on the web was neither highly informative nor interactive. Personal preferences however, were quite prevalent in this arena.

5.3.4.2. Web-based learning calls for seasoned course-presenters

It became quite evident that both the students and the lecturers or course presenters had varying levels of experience with web-based courses. Learners and course presenters were conditioned into a particular learning and instructional style, and this style was transferred to web-based learning.

Students were exposed to these different levels of experienced in web-based learning environments through the course. The systems thinking module clearly stood out as the module that best ascribed to the mode of learning that they had expected and consequently they used this module as a benchmark where upon they compared the other online-courses that they were studying.

The positive experience gained through this course generated frustration directed towards courses that did not 'match up'. It was through this course that students gained greater exposure to the process of computer-mediated communication. The responsiveness of the course presenter(s) provided the much needed feedback to stimulate discussion. This course personified interactivity for these students.

5.4. CONCLUDING REMARKS

Chapter five revealed the experiential categories and elicited some of the patterns that emerged during the exploration process. It is evident that there is great potential in embarking on web-based training courses. However, it is also clear that a re-thinking is called for regarding the communication processes and instructional processes that are entailed in this course. Both students and lecturers are required to uncondition themselves from previous modes of traditional class-based (offline) learning and acquaint themselves with fresh lenses to the new arena of interactive web-based learning, i.e. computer-mediated communication.

CHAPTER SIX: DISCUSSION

6.1. Introduction

During this research process an exploration of computer-mediated communication in a web-based learning environment was undertaken. Chapter six brings this dissertation to closure through taking cognisance of the methodological and theoretical fit to the research findings, and attempts to situate the research findings within the context of the literature collected and the relevant emergent aspects of web-based learning. This chapter concludes with a reflection on the exploration process that was engaged upon in this thesis.

As indicated in chapter three the aim of this research study was to explore and to offer a description of the experiences of students who encounter this virtual medium in the form of web-based instruction. Owing to the exploratory nature of the study a qualitative research process was engaged. This provided a suitable vehicle for this journey as it allowed for exploration into the different facets of experience that were revealed.

A difference in the web-based course that was evident, as compared to that which was reviewed in the literature collection, was that the course was not completely web-based. This course was supplemented with offline class-based forums.

Due to the addition of offline personal contact the full spectrum of true experiences in web-based learning environments could not be sufficiently addressed. This particular

course that students embarked on was a combination of distance learning (as facilitated by the web) and face-to-face instruction (owing to required practicals, workshops and meetings).

However, the benefits and disadvantages of both web-based learning and computer-mediated communication were strongly revealed through this exploration. There was a strong emphasis on interactivity.

The social world of the learner in the realm of the web-environments could not adequately be described as again it was diluted with experiences engaged in offline. Consequently the concepts of physical boundaries, cyberspace and cybertime were not strongly situated.

6.2. The web-based learning system

As discussed in chapter three, the systemic lens allows for one to grasp and understand the bigger picture. The bigger picture refers to stepping back and seeing the 'whole', as well as the inter-connectedness of the parts that make up this 'whole'. For purposes of this discussion the 'whole;' is regarded as the realm of the web-based learning system as initially described in figure 3.b. However, figure 6.a (page 118) extends this description to include personal interaction that appears to occur outside this system.

It should be noted that during this exploration process it emerged that this particular web-learning system includes offline sub-systems (that influence interaction within this online system).

Figure 6.a (page 118) generates a visual representation of the human (social) interactions that occur within the web-based learning system (both online and offline). There are various sub-systems involved in the web-based learning system (as previously discussed in chapter three):

- Firstly, there is the individual system of the student. This system is influenced by the relevant course, learner's own perceptions, expectations and beliefs and state of physical well-being.

- Secondly, there is supra-system of the class. The supra-system consists of the individual member systems. In the context of the class-system, each student typically interacts with each other (socially or academically) via the web utilising e-mail as the communication medium, and personally (verbal communication face-to-face as well as telephonic). Interaction in both these media effects on the communication process as well as the way in which the communication is experienced.

- The interaction between student and lecturer (both offline and online) constitute the third system.

Figure 6.a. Revised web-based learning system

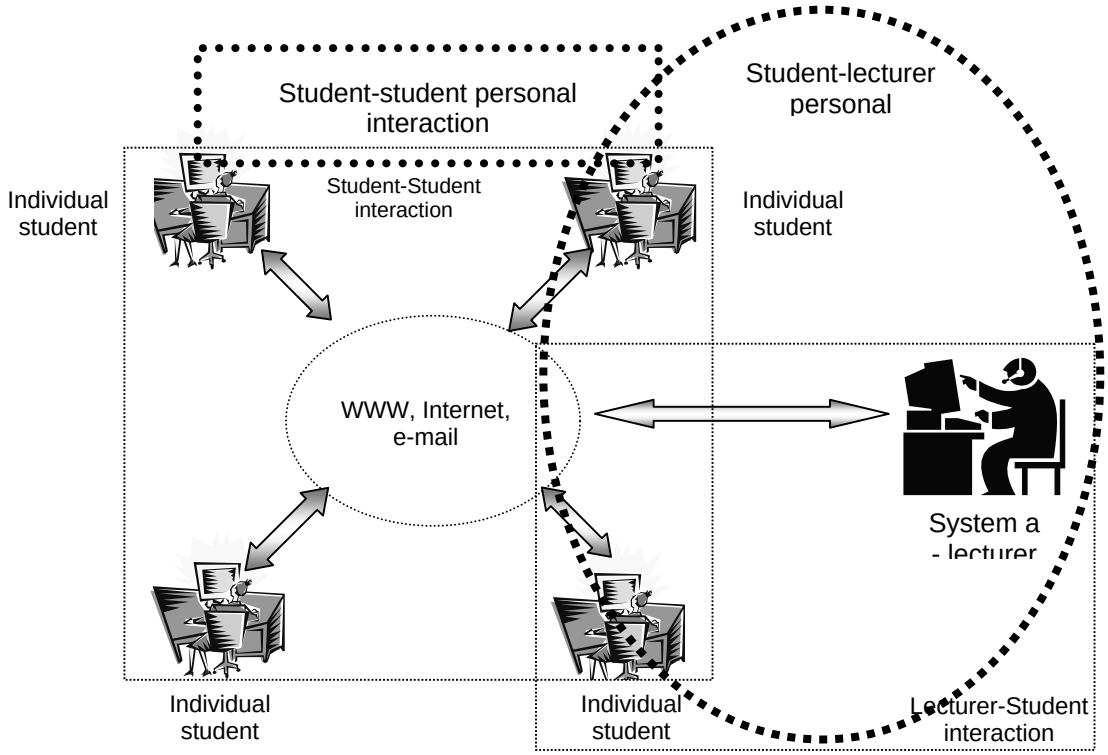


Figure 6.a

Systemic concepts such as feedback and meaning construction have been integrated during discussions on the experience of computer-mediated communication overleaf.

6.2.1. Computer-mediated communication

6.2.1.1. Facilitation of multiple site accessibility

Learners were able to transcend physical distance to be in contact with online learning resources and web sites, and interact online with classmates from any location. This afforded accessibility to learners who resided outside the borders of Pretoria. Facilitation of multiple site accessibility was not perceived as problematic and continues to be a driver towards web-based learning. This situates web-based learning as an ideal distance-learning medium (infrastructure dependent). However, ease of accessibility of the various sites was very much dependent on technical infrastructure. Technical barriers or hindrances revolved around bandwidth problems and Internet traffic on relevant sites.

6.2.1.2. Learner-controlled environment

As Kilby (1992) pointed out, the key ingredient towards success in a web-based learning environment is personal discipline. Learners should be able to adequately guide themselves keep up with your required study tasks and goals. Learners were afforded the opportunity to work independently and at their own pace. Independent learning has typically been the norm at tertiary education level. Web-based learning situated the web-learner in an even greater learner-controlled environment, than what he/she was previously conditioned to. The extent of the independent and own pace learning was however, hampered somewhat by increased offline interaction for learners located in close proximity to the university. Thus, the flexibility, time-

effectiveness and convenience that would traditionally be afforded to the web-learner were not as intense under this context.

Learners, who were not able to adjust to the increased control over their learning time, had tremendous problems managing their time and also felt that their academic demands were, at times, overwhelming.

Information overload did not emerge as barrier to web-based learning. The opposite was more prevalent. Learners expressed enthusiasm and excitement at the information doorways that the Internet (and web-based learning) brought to them.

6.2.1.3. Structured asynchronous communication

The computer-mediated communication that learners engaged in was primarily asynchronous, both one-to-one (e-mail) and many-to-many (list servers). List servers were specific for each subject/ module available on the course. There existed limited use of synchronous communication (chat rooms).

Learners felt comfortable with asynchronous communication, and consequently this became the mode of computer-mediated communication most frequently utilised. Whilst infrastructal problems with synchronous communication was a contributing factor, the prime reason for this preference had to do with students being afforded the time to think through what they wished to say and how they wished to say it. An additional factor was that of home language. English was not the first language of some respondents and communication via e-mail was primarily in English.

This mode of communication was novel to them and as such they were not accustomed to how one should or was able to communicate in the web environment. This time to construct their message (communication) allowed for them to construe ways in which the various recipients could interpret their message, and also attempt to provide social cues to the message. Consequently, e-mail had become the preferred form of computer-mediated communication for many learners.

6.2.1.3.1. Feedback

Continuous feedback from classmates and lecturers was important in maintaining social interactions online as well as for promoting active learning. A related factor was the novel communication medium, which created an almost addictive sense/need for feedback - to know that their message (voice) had been received and that online social interaction was promoted, i.e. relationships or contact was maintained with significant others in the realm of the online classroom. Lack of or irregular feedback generated feelings of irritation when it impeded moving forward with work.

On another level, it was also anxiety provoking as it generated feelings of isolation or alienation, as there was the need for validation of 'life' in the web-classroom - a need for a sense of belonging as the whole experience was new to them. This need for validation of life and sense of belonging, and also not being completely accustomed to the life of a web-learner, served as a foundation for the expression of a greater need for personal social interaction amongst classmates. As was the case for majority of the learners. This also formed the basis for the expressed need for visual social cues, such that could be facilitated by the use of web cams.

6.2.1.3.2. Interactivity in text-based environments

Students were afforded the opportunity to engage in discussions with classmates and lecturers online, as well as offline. As discussed earlier, interaction was primarily e-mail based - utilising both direct e-mail (individual-to-individual) as well as posted to list servers. Chat room interaction proved to be frustrating due to technical hindrances.

Whilst learners were afforded the opportunity to receive their education and training at any time and from any location, accessing much of the required study material had to be sourced personally and this was not always readily available.

Infrastructure was not as problematic regarding asynchronous communication. It was more cost-intensive, in reference to personal outlay for the required equipment and software, Internet access and telephone bills.

6.2.1.3.3. Delivery of training to learners

Delivery of training was multimodal, i.e. it took place online and offline. Assignments and study tasks were sent through quicker and at a much cheaper rate via email. This process normally would afford learners more time to allocate to their studies. However, in the context of the students' experiences, personal workshops and meetings usurped the time made available via online learning. Thus, the concept of being afforded more time was an expectation of web-based learning that did not materialise for the majority of respondents. An additional hindrance was the study

tasks that were due offline. There was also the added cost of transportation to class and printing requirements.

The course presenters were not always equipped to provide guidance and support to learners online. The irregular feedback or responses obtained from some course presenters provided much frustration and alienation to learners. Under these conditions optimal collaborative learning in all facets of the web-based course was not facilitated. In some of these contexts, there did not appear to exist strong co-operative efforts among both course presenters and learners. There was not always active participation and interaction from both parties. When collaborative learning was fostered, learners expressed greater positive attitudes towards those subjects (modules).

Learners also increasingly became reliant on accessing various online resources for information acquisition. This promoted technical skill development and widened the information scope of the students.

6.2.1.4. Cost-effective medium

Traditionally, web-based learning heralds a cost-effective medium. This would be in comparison to personal or face-to-face instruction. However, in South Africa, this medium has only been recently accessible to a greater majority of people. During the context of the students' experience of web-based learning, there was great capital outlay to set-up the required infrastructure, so that they could learn (work) from the comfort of their own homes. Owing to the dual mode of learning engaged in the

course, there was still emphasis placed on textbooks in addition to use of online resources. Encouragement or promotion of the use of online resources was not consistent across subject modules, thus there was no strong perceived minimisation in costs. The cost factors that played a pivotal role were thus set-up and telephone costs.

6.2.1.5. Barriers to web-based learning

As discussed in chapter three, web-based education brings to the fore the need for different skills as opposed to traditional methods of learning. Writing skills were developed, and to an extent, replaced by typing skills. Learning now took place primarily asynchronously. Writing skills may not be well-developed as they would have been under traditional modes of learning, owing to online writers' use of abbreviated words and symbols in order to type a message faster (a phenomenon that developed through the need for greater convenience and speed of message compilation - very much similar to what is utilised via the medium of SMS or short message service).

Basic computer and Internet skills were felt to be essential in empowering the web-learner and rendering him/her more comfortable to interact in this environment. The web-learner had to acquire the skills (if he/she did not already have them) of operating a computer, accessing e-mail and navigating the web (surfing).

Not all learners were able to successfully adapt their traditional (previously learnt) forms of learning and communication behaviour to accommodate those of this new environment. This proved a hindrance for some learners and fuelled their need for greater personal social interaction amongst fellow-learners and course presenters.

6.2.1.6. Social interaction in cyberspace via computer-mediated communication

Although the Internet has allowed for both physical and social distances to become increasingly irrelevant to information-based interactions and transactions (Watts, 2000), learners entrenchment or conditioning in traditional modes of learning as well as their discomfort initially in communicating via the web, resulted in their finding it less easy to transcend social distance.

Students were not readily comfortable to interact in an environment that affords them the freedom, time and medium to express themselves as they wished to. The environment was new to them and so to was interacting within this context. The habitual social cues that are used as validation for interpretations of meaning derived from interactions were absent. Learners, like most web-users, resorted to utilising emoticons (such as smileys) to convey emotion and inferred meaning to their messages. Writing styles of individuals were later utilised to construe further meaning to messages. However, many learners expressed the need to have to put a face to the message so as to facilitate meaning construction.

Learners were not afforded the luxury of having their social interaction in the world of cyberspace enhanced through the use of media accessories such as video-conferencing (web cams). This facility allows for the ability of real-time conversations whilst affording the conversational participants the opportunity to obtain some of the social cues (non-verbal) that they would typically experience during a 'live' (off-line) social interaction. Some learners consequently expressed a desire for such accessories so as to re-integrate the traditional social cues with the new communication medium.

6.3. Web-based learning in the South African context - concluding comments

The social landscape of the virtual frontier is vastly different from that which people are traditionally or commonly used to. In this 'new' millennium, many South Africans, even at the school level, are interacting in this arena and experiencing this communication style. Communication wherein what you are able to see is only the text-message 'glaring' on a computer screen. This is the representation of the person who sent the communication as well as the content of the communication it self. The interpretations of the sender's message and of the sender are left up to the recipient. The text message and the tone perceived in the message are used to create a picture of the sender in the 'minds-eye' of the recipient. This gives new meaning to the phrase 'reading between the lines'.

6.4. Recommendations for future web-based learning endeavours and potential students

6.4.1. Advice to prospective web-learners

Advice that strongly emerged for potential web-students were primarily related to adequate computer skills and successful time management strategies. As with most courses, prospective students should do background research to completely understand the process and requirements of the study course that they are about to chart, and attempt to familiarise themselves with these.

6.4.2. Advice to prospective web-course presenters

Course presenters need to have the adequate skills to present information in the web, and understand the processes involved in web-base courses. Interactivity in the context of a web-based course is pivotal to success. Students require feedback. It promotes discussion and active participation amongst group members.

6.4.3. General guidelines

The research has strongly highlighted the need for a greater understanding of web-course design and presentation from the perspective of both the student and the course presenter. Web courses must be interactive and informative.

Students need to completely understand the study process that they are to embark upon and be privy to what is expected of them. This responsibility lies with both the student and the course presenter or study leader.

It is the perception of the researcher, that with greater exposure to this medium of instruction over time, perhaps from an undergraduate level or even an honours level, students and lecturers will be able to understand and function more effectively within this environment.

6.5. Evaluation of the research study

This section looks at the appropriateness of the methodology employed in this study.

6.5.1. Respondent selection

Respondents were selected from two different year groups. This added another dimension to the research. The two year groups academic experiences and contexts were not exactly the same. A historical-comparative research study might have been more appropriate in this scenario. However, the aim of the research was not to identify differences between year groups but, to identify and describe experiences of the students in an interactive web-based learning environment.

6.5.2. Theoretical application

At the outset, the systemic lens appeared to be ideal to describe, understand and explain the experiences of students in the web-based learning environment. The aspect of a dualistic mode of learning, i.e. one that was both offline and online was not perceived to be an influencing factor in the research. This aspect did not allow for the true richness of experiences in the web environment to be revealed. The experience of the course itself coloured the experience of the environment to a great extent. Consequently, probing into the interactional patterns online and the implication thereof was not extensively covered. The interaction of the class system both offline and online were to clearly extrapolated.

6.6. Researcher's perspective

This journey has allowed for an understanding of the need for stronger grounding in theoretical applications into research studies. The researcher's inexperience in this realm is made apparent. It is noted that it requires a lot of effort and care to completely situate yourself in the experiences that you are exploring and separate them from the ones that you have encountered. Having experienced the course did however, enable the researcher to obtain a richer understanding of the experiences revealed by the students.

The journey has not been without obstacle and has promoted much thought on both a personal and academic level. The journey was not as what it was perceived to be - a smooth ride from start to finish.

The interviewing process revealed that excitement and anxiety play an important role in the way you conduct an interview. It lends itself poorly to adequate probing. There is also the tendency to get carried away in detail.

6.7. Concluding remarks

This has been an insightful exploration. It has been enriching personally and academically.

This process has highlighted the need for an understanding in South Africa of the psychological and social implications of web-based learning. It does have a place in the South African education arena, at a cost. It challenges socialisation processes, learning and teaching methods. It is not without financial implications. This learning medium strongly establishes English as the universal language and computer skills as important in surviving in this environment.

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APPENDIX A

- DISCUSSION GUIDE -

APPENDIX A

A systemic analysis of postgraduate students' experiences of computer-mediated communication in a web-based learning environment

DISCUSSION GUIDE

1. Expectations

- What were your expectations of the course: knowing that it's web-based?
- How did you anticipate it to be in comparison to your undergraduate & honours years of learning, i.e. attending regular classes on campus?
- How did you think it would affect your life, if at all? - Re: academic, social + personal life
- What changes did you anticipate implementing in your life? (probe)
- Did you feel prepared for this course, both personally and academically? (Probe)

2. How do you feel now?

- Going back to what you felt at the beginning of this year regarding your expectations of this course (Focusing on what were your expectations) - were they met? Why do you believe? (probe)
- How has your life been affected, if at all? (Probe - personal adjustments, academic/personal stress/pressure)
- What were the changes/impact that this course has had in your life, thus far?
- How would you describe your interactions/relationships with your classmates via the web? Is it different than face-to-face contact? How? Why?
- How would you describe your interactions/relationships with your lecturers via the web? ? Is it different than face-to-face contact? How? Why
- Close your eyes and visualise yourself sitting in front of your computer - How do you feel: when you begin downloading your email messages/lectures etc? Do you enjoy this type of communication, i.e. sending messages to listservers or posting messages on electronic bulletin boards?

Additional probes (if required)

- Describe your feelings towards this type of learning environment? How do you feel about it? Why? (What are the attitudes towards electronic interaction?)
- Is it important for you to see "something" of the person in the e-mails - "see the individual" / "put a face/character to the message"? Why is it important?
- How do you distinguish between various persons through their email communications? What do you learn about these people via these communications?
- {Probe: Personal Boundaries[intimate, personal, social and public] - ito communication, Concept of time, Concept of space - Spatial awareness (Relate to boundaries)}
- How does this type of learning environment effect communication and understanding between you and your classmates (and lecturers)?
- How interactive did you experience this environment to be? Did you experience a sense of inter-relatedness and shared experience with your classmates?
- How would you describe the support offered by the various members of your web-learning environment? Did any conflict arise? How did you deal with it?

- What are your current feelings regarding this web-based course, not focusing on the content?
- How would you feel towards web--base learning if you had no face-to-face contact with your classmates and lecturer? - i.e. if the only communication-connection or medium that you had to utilise was this virtual environment?
- How did you perceive, interpret, structure, and react to time and the messages encountered in this electronic environment?.
- Was there any opportunity for group work (online) among your class? If so, how was this accomplished?
- Do you enjoy online group work or did you prefer working independently, i.e. on your own? Why?

3. Recommendations

- What are the advantages/positive points of web-based learning (CMC), in your opinion? (e.g.: promotes active learning, is highly interactive, enabling frequent dialogue, tends to equalise participation, providing true many-to-many interactions, provides access to experts online who would not be available otherwise)
- What are the disadvantages/negative points of web-based learning (CMC), in your opinion?
- (How did you deal with these negative points? How can they be made positive?)
- Is there anything that you would have had differently or would have done differently? (What would you have liked to have had differently, if anything?)
- Would you recommend web-based learning?

- Why?
- What preparations would you recommend for students contemplating pursuing web-based learning courses?
- Focussing on this web-based learning course that you have been through - would you term it as a good or bad experience? Why?

APPENDIX B

A systemic analysis of postgraduate students' experiences of computer-mediated communication in a web-based learning environment

The identification (creation) of meaning units: Students' responses to Web based learning.

Web-based learning	Meaning unit
Freedom to work from home, and at times that suited me	[1] Work from home [1] Flexi-time (learning/working) [1] Independent learning/working
But with Internet time and place is not really of much significance any longer	[3] Transcendence of physical distance
I remember being quite excited about the prospect of using the Internet to do the course	[8] Excitement projected at novel medium
I might have been a bit concerned about being appropriately prepared for the medium of the Internet	[2] Initial acquisition of technical skills warranted
My main expectation was to improve myself, my skills, my knowledge	[2] Improvement/ enhancement of technical skills
Expected not to come to class at all - not meeting people at all. Sitting alone	[1] Flexi-time (learning/working) [1] Work from home [1] Independent learning/working
Expected a lot of work. Work on my own time on the Internet	[1] Flexi-time (learning/working) [1] Independent learning/working
Expected a lot more fun and less work and have more time to myself	[1] Afforded free time

Web-based learning	Meaning unit
Expected to only learn research	[5] Opened new avenues (learning)
Thought that it's a computer-based course and that I wouldn't have to meet s often on campus.	[1] Work from home
Expected that everything would be easier, convenient.	[3] Promotion of convenience [3] Easy accessibility
I saw learning about the Internet and e-mail as a natural transition in my life.	[5] Open to new experiences and change
I did not think that it would affect my life in any major way, to me it was very much an increase in computer skills	[2] Improvement/ enhancement of technical skills
I did not expect a difference, except for working on your own	[1] Independent learning/working
Expected it to be different - working on your own - more like a UNISA set-up	[1] Independent learning/working
Freedom to arrange my daily program as it suited me	[1] Flexi-time (learning/working)
It was more about getting motivated to get the right mind set, to get organised and as I have said to handle the pressure.	[10] Disciplined focus [6] Academic pressures
I really thought that I would have a social life for a change. Seeing more people, going out…	[4] Increased offline (personal) social interaction
I expected it to be like a distance - part-time, flexi-time. It wasn't like that at all	[1] Flexi-time (learning/working) [1] Independent learning/working
I expected that I'd be there when my boyfriend came home from work	[4] Increased offline (personal) social interaction
Thought I'd stay at home and work, and I wouldn't have extra work to do	[1] Flexi-time (learning/working) [1] Work from home

Web-based learning	Meaning unit
I thought that I'd finally get the technology, improve my computer skills, connect with people.	[2] Improvement/ enhancement of technical skills [4] Increased online social interaction
I thought that it would be easier (life), working when I wanted to.	[1] Flexi-time (learning/working) [1] Independent learning/working
I think I needed, should have found out more things before hand	[2] Initial acquisition of technical skills warranted
I was absolutely petrified, but I was also prepared to learn.	[5] Open to new experiences and change
I was worried about getting on to the server	[2] Initial acquisition of technical skills warranted
When there's something new, I'm always wary about it	[5] Open to new experiences and change
The way in which the course facilitated my personal growth far exceeded my expectations	[5] Opened new avenues (learning and information)
I found it to be a very difficult learning experience	[8] Learning experience problematic
Using the Internet opened up an entire new world for me.	[5] Opened new avenues (learning and information)
I found my learning curve moving beyond the course to learning about using the computer in a highly effective way	[2] Improvement/ enhancement of technical skills
Learning more about the computer was not an absolute pre-requisite for the course but an interest that was fuelled by the compulsory use of the computer in every day interactions	[2] Improvement/ enhancement of technical skills

Web-based learning	Meaning unit
Sometimes I felt that the quality of work was compromised due to the fear of the Internet. On other occasions I was taken back by the creativity and challenging use of the Internet as a learning tool.	[2] Technical barriers present [2] Improvement/ enhancement of technical skills
I am really enjoying it	[8] Excitement projected at novel medium
In terms of my learning of the Internet they were met (expectations). Expectations of working at my own pace, they weren't.	[2] Improvement/ enhancement of technical skills [1] Poor time-management
I came to realise that virtual realities are quite acceptable and in some ways even easier to cope with than the physical world.	[11] Increased comfort in communication in medium
My life has been totally affected - I once used the computer just to get by, now I pride myself in being a 'power user' - Why waste your time doing a task when the computer can do it for you.	[2] Improvement/ enhancement of technical skills
It exposed me to a new world	[5] Opened new avenues (learning and information)
It made me realise that there is a growing world outside that I would never have been exposed to	[5] Opened new avenues (learning and information)
The amount of work and stuff like that - yes, obviously affected my life socially and emotionally	[6] Academic pressures [4] Decreased personal (offline) social interaction
You had to work hard (in the course)	[6] Academic pressures
Socially, I almost never went out this year because there was never time	[6] Academic pressures

Web-based learning	Meaning unit
There were definitely pressures (academic) and it definitely impacted on my social life in some way or another	[6] Academic pressures [4] Decreased personal (offline) social interaction
Affected my relationship with my boyfriend	[4] Decreased personal (offline) social interaction
Had to stop playing hockey… I didn't want to do that	[4] Decreased personal (offline) social interaction
I think with PM for instance, it's possible to have like a kind of a business, professor-student relationship with him on the web, 'cause he always answers you back, he always talks to you over the web. He's not (uncomfortable) with working in that way.	[9] Continuous feedback from course presenter
For instance, MM, you can send her… you can mail bomb her and she still world not reply	[9] Irregular feedback from course presenter
You could ask for classes (offline) when needed	[9] Offline classes warranted
Only a few classes were Internet based. Sometimes we had to come in. I felt irritated. I expected never to come in.	[9] Dislike of offline interaction [9] Negative associations towards course
(Systems) Every time you sent something he replied. He responded immediately	[9] Continuous feedback from course presenter
MM never responded. MV, I don't think she read her e-mail	[9] Irregular feedback from course presenter
They all responded, sometimes after two days. I felt irritated because they are supposed to communicate via e-mail. They are supposed to be there.	[9] Irregular feedback from course presenter
It was excellent (classmate interaction)	[4] Positive attitude towards online interaction with classmates

Web-based learning	Meaning unit
Costs a lot of money to be online all the time	[3] Cost-intensive
Log on problems, as it throws you off (chat room)	[2] Technical barriers present
I have a strong preference to this (WBL). I think that it can work very well.	[8] Positive attitude towards web-based learning
I think it can be an excellent medium (WBL).	[8] Positive attitude towards web-based learning
Excellent comes to mind (WBL). Which is a contradiction because this course wasn't really excellent	[8] Positive attitude towards web-based learning [9] Negative associations towards course
I feel more confident (using the computer)	[2] Improvement/ enhancement of technical skills
Negative experience, feelings…not of web-based learning but because of the course. It wasn't completely web-based.	[9] Negative associations towards course
Not negative towards the medium, but towards the course.	[8] Positive attitude towards web-based learning [9] Negative associations towards course
The feelings of the course, colour the way in which I feel about the (WBL)	[9] Negative associations towards course
I found the web-based course much more satisfying than coming to varsity for lectures every day. I never felt that my time was being wasted, as is so often the case with lectures	[8] Positive attitude towards web-based learning
I will increasingly in future only communicate with other people through Internet, it is far easier and in every way more convenient for me.	[11] Comfortable with e-mail communication [3] Promotion of convenience [3] Easy accessibility

Web-based learning	Meaning unit
I think a far more effective way of learning.	[8] Positive attitude towards web-based learning
In some ways I still think some of the components are hard to grasp without live discussion, but for that I'm sure there will soon be a cost-effective solution through the Internet too.	[7] Desire for personal contact amongst class mates
I really enjoyed the course because I could work on my own time; my schedule changed quite a lot.	[8] Excitement projected at novel medium [1] Flexi-time (learning/working)
The flexibility suited me very well.	[1] Flexi-time (learning/working)
It improved my computer skills very, very much, that is really one of the great advantages.	[2] Improvement/ enhancement of technical skills
I think its amazing. I think there is a lot of opportunity for learning and also for development	[8] Excitement projected at novel medium [5] Opened new avenues (learning and information)
Don't be afraid to take a step, don't be afraid to learn	[5] Open to new experiences and change
I have to sit in front of the computer everyday otherwise I feel that something is missing	[8] Addiction to medium
Especially the Internet it is a whole new world.	[5] Opened new avenues (learning and information)
It opened my eyes and it have me life to a new horizon	[5] Opened new avenues (learning and information)
(Can be) more personal because there's no physical contact. More free to say something, feel more comfortable to say something	[11] Freedom of expression [11] Comfortable communicating via e-mail

Web-based learning	Meaning unit
It's good (e-mail); you need this type of communication. It's sort of convenient to e-mail.	[11] Positive towards e-mail communication [11] Convenient mode of communication
I also think that you need to see people and have personal contact	[7] Desire for personal contact amongst class mates
It (computer) added this convenient and new world	[5] Opened new avenues (learning and information)
It's (computer) given me this feeling that I can connect to people, but at the same time it's made me appreciate people contact.	[7] Appreciation of personal contact amongst class mates
I really feel that it is different because I am speaking to somebody that I know out of her e-mails, but I would really love to see her face-to-face.	[3] Promotion of convenience [3] Easy accessibility
I would really feel restricted (without personal contact)	[7] Desire for personal contact amongst class mates
I think that I would feel alienated (without personal contact). You need to talk to the lecturers and interact	[7] Desire for personal contact
Social contact is important as an enhancement to web-based learning	[7] Desire for personal contact
We need social support, it's idealistic to think that we don't need social support	[7] Desire for personal contact
Relationship hasn't grown (with H). It hasn't developed into the relationships (with other classmates) that have developed.	[7] Appreciation of personal contact amongst class mates
It enhances relationships (e-mail). It's cheaper to e-mail and to keep in touch with people	[4] Promotes social interaction [3] Cost-effective
I crave to meet the friends, I need the support	[7] Desire for personal contact

Web-based learning	Meaning unit
I'm not as productive at home as I am on campus	[1] Poor time management
(Person-to-person across a distance) yes, that's even better or more of an advantage because you don't have to drive all the way to the person	[3] Physical distance transcended [3] Promotion of convenience [3] Easy accessibility
I feel web-based learning is a terrific idea. It may be difficult at first	[8] Positive attitude towards web-based learning
And, yes there may be certain areas of communication that are better on a more personal basis, but in the end it allows for people to think independently and proactively seek solutions.	[7] Need for personal contact [1] Promotion of independent learning/working
Using the Internet and e-mail effectively requires time and practice	[[2] Improvement/ enhancement of technical skills
There are certain aspects of human interaction that cannot be replicated through web-based interactions	[7] Desire for personal contact [7] Social contact not the same via web medium
That is why it is important that they have workshops and meetings because you keep in touch with how other people are feeling	[7] Desire for personal contact
I wouldn't have mind the workshop if it was different, I would've preferred it being on the web so that I can learn it in my own time	[1] Flexi-time (learning/working) [1] Independent learning/working
We really came closer even though it was through e-mail	[4, 11] promotion of social interaction through e-mail
In order to build a relationship, definitely because that is the only way to interact with the person or otherwise you just talk to yourself (feedback from message recipient)	[4] Feedback is important
We mostly used e-mail. I preferred e-mail.	[11] Preference for e-mail communication

Web-based learning	Meaning unit
Taking it too seriously is one problem we have with e-mail. It was not understanding what the other person was saying	[7, 11] lack of social cues in e-mail communication
People felt that they had to clarify things in the message, because it's first time on e-mail, therefore longer	[7, 11] lack of social cues in e-mail communication
For me it's absolutely wonderful I can't have it any other way. I don't actually see it as me and the computer. It's me and the whole world outside or inside the virtual world or how ever you want to call it	[8] Positive attitude towards web-based learning
It's more a gateway (into the world). My computer is like another person. If you want to see it like that. So, yes, it's actually more like a gateway, in which I can see and experience.	[5] Opened new avenues (learning and information) [11] Comfortable communicating via e-mail
In the beginning were generally scared to speak to each other, or not scared but, you know, kind of scared for using e-mail or whatever, just writing. For instance M would phone you and ask you this and that. Most of the people would phone you.	[11] Increased comfort communicating via e-mail
Just going on the Internet and you know there's always something new and something nice. Did anybody send me a message? What did they say? You know that kind of thing.	[5] Opened new avenues (learning and information) [8] Addiction to medium [4] Promotes online social interaction
I guess it is (different). But it depends on what interaction you're talking about over the Internet. If we're talking about interaction with people I know, then it's the same as it would generally be when I see or when, you know, like in my social world	[4] Promotes social interaction

Web-based learning	Meaning unit
If it's somebody I don't know, or know to a lesser extent, I'll say I actually… I'm more open to that person. I would say more about myself. I would be more myself.	[11] Freedom of expression e-mail communication
I think that the freedom of the Internet of… nobody else seeing you and having control over the other person because although you don't actually…have control (have control over who you portray on the Internet allows freedom of expressing yourself)	[11] Freedom of expression e-mail communication
You don't have public opinion at all, it's you and whatever is outside there and nobody outside there knows who you are… and then can't say anything.	[11] Freedom of expression e-mail communication
(Emotion In the message) Yes I think it is very, very important because the person affects you a lot	[7] Presence of social cues in message
(See something of the person In the message) Yes, that it what makes it user friendly. it makes me feel comfortable.	[7] presence of social cues in message
Very because people are important and Even though computers are a large part of our lives one cannot ignore the people.	[7] Presence of social cues in message
I really feel that it is different because I am speaking to somebody that I know out of her e-mails but I would really love to See her face to face.	[7] Presence of social cues in message [4] Desire for personal contact
I think ja. I would have an idea. Just the way in which people talk. Like for instance V is always very happy, and her e-mail is always happy. It's just "hi you guys! How are you today? It's such a lovely day". It's her personality, it's the way she is	[7] Presence of social cues in message

Web-based learning	Meaning unit
(Transfer of online relationship offline) Ja. Which is nice and strange. 'Cause usually out of my own experience, if you don't know somebody beforehand ad you never had any physical contact, contact with that person ever, you communicate over e-mail	[4] Promotes social interaction offline
Some components of the course (e.g. research methodology) could have been better structured.	[9] Course improvements
Although it was difficult at times to effectively communicate with others through the web, I cannot think of how the course could have been structured differently to over come this.	[11] Effective on-line communication problematic
At the beginning of the year there was…because you had to go sit in front of your computer and learn everything but looking back now I think that was the best because I have learned a lot in just about 3 months time, there was not a lot of thinking	[1] Independent working facilitated
Well, In the first place the lecturers have to be more experienced with the Internet, communicating over the Internet and the programming on the Internet has to be much better - more interactive, more information has to be put on the web. More resources, more links to resources.	[9] Course improvements
More interactive…not… it doesn't have to be nice to look at or anything like that, but it has to be more interactive.	[9] Course improvements
If you read something and you don't understand it, this, there as to be some way in which you have to find out about this.	[9] Course improvements

Web-based learning	Meaning unit
It's like statistics, okay, we didn't have statistics on the web, in any way. But it's something we spoke about in the focus groups, if you can have a statistics programme or a web page and there are some of them of other universities.	[9] Course improvements
Everything should have been done on the web. No interaction at all (offline).	[9] Course improvements [4] Preference for online interaction
Learn to use e-mail	[10] Preparation/ recommendation for web-based learning [2] Initial acquisition of technical skills warranted
Learn how to surf	[10] Preparation/ recommendation for web-based learning [2] Initial acquisition of technical skills warranted
Learn how to do searches on the Internet for academic purposes	[10] Preparation/ recommendation for web-based learning [2] Initial acquisition of technical skills warranted
Go on to chat rooms and learn the culture because it's a totally new culture which people are not usually used to.	[10] Preparation/ recommendation for web-based learning [2] Initial acquisition of technical skills warranted
Socially, if you go this course, prepare not to have any social life at all. Others no…	[10] Preparation/ recommendation for web-based learning [4] Decreased personal contact
I think it was… web-based learning in general was a good experience for me. I really prefer it, I really like it	[8] Positive attitude towards web-based learning

Web-based learning	Meaning unit
And I think that there's a lot of potential in the web-based learning, which can be developed…	[8] Positive attitude towards web-based learning
You know like if you have those little cameras where you can see each other? If we had that resources, I mean, face-to-face, whenever you want to speak to each other ➔ No it's not important, not important at all, but, mean the problem is not seeing each other	[4] Desire for personal contact [7] Need for social cues
Typing rather than speaking is a problem for people	[11] Text-based communication problematic
Less commuting time, more time for other things. You may feel isolated without the regular social contact with fellow students.	[10] Preparation/ recommendation for web-based learning [1] Afforded free time [4] Need for personal contact [3] Physical distance transcended
More time for family. You may find it difficult to motivate yourself.	[10] Preparation/ recommendation for web-based learning [1] Afforded free time [1] Requires discipline and independent working
More time for leisure pursuits. You may feel that it's hard to stop working at the end of the day.	[10] Preparation/ recommendation for web-based learning [1] Afforded free time
Less stress, better health. Your friends/family may drop in to socialise, and you may find it hard to turn them away.	[10] Preparation/ recommendation for web-based learning [1] Requires discipline and independent working
Less money spent on petrol. It may be hard to resist the refrigerator, TV, or other distractions.	[10] Preparation/ recommendation for web-based learning

Web-based learning	Meaning unit
Dit maak jou self-staandig	[10] Preparation/ recommendation for web-based learning [1] Promotes discipline and independent working
Jy leer om op jou eie twee voete te staan. In terms of having to do you own thing.	[1] Promotes discipline and independent working
Learns you to be more volwasse.	[1] Promotes discipline and independent working
It's top of the technology.	[8] Positive attitude towards web-based learning
It's first world	[8] Positive attitude towards web-based learning
It's experience that you can get anywhere over the world across the boundaries of colour and race	[8] Positive attitude towards web-based learning [3] Transcends physical distance (space)
Freedom of time and movement.	[1] Facilitates flexi-time
It makes the world relatively small, you can actually now study anywhere. One can also get to know people very well on an individual level.	[3] Transcends physical distance (space) [4] Promotes online social interaction
The fact that you can reach a lot of people with it, with one instrument a lot of people can learn	[3] Transcends physical distance (space) [4] Promotes online social interaction
It sends one's telephone bill through the roof!	[3] Cost-intensive
Also, if lecturers are not committed to a web-based course, the whole thing can easily grind to a halt.	[9] Commitment is required from course presenters

Web-based learning	Meaning unit
Sometimes it was frustrating to have to wait for answers on questions or if nobody replies to an input which I thought was good.	[8,11] Asynchronous communication frustrating [9] Irregular feedback from course presenter
Also to be exposed to a lot of information	[5] Exposure to information sources
Well, if you're a social person, who likes to interact with people, it probably wouldn't be very lekker for you and you wouldn't like it, and you would prefer coming to class. But if you are somebody that, you really, you know, kind of an, your own person and if you have a bit of experience with the Internet, it can be the most thrilling experience of your life, really. It's very nice.	[4] Desire for personal contact [4, 11] promotion of online social interaction
Maybe that you are restricting the person-to-person contact, even though there are people involved.	[4] Restriction of personal contact [4] Desire for personal contact
I think they can improve it by making the computer more person friendly to put a little reminder of the person on the computer, because that way in your sub-conscious people will still be aware that you are dealing with some kind of person.	[4] Desire for personal contact [9] Course improvements
Without hesitation. Let me qualify: I would recommend the MA (Research Psychology) web-based course. I don't know enough about other web-based courses to make a general recommendation.	[9] Course recommendation
I think the effectiveness of a course depends more on the content (and the lecturers!) than on the medium.	[9] Course content and presenters influences web-based learning
My answer is therefore a qualified Yes. I would say: first talk to students who have already completed the course to find out what their experiences were.	[10] Preparation/ recommendation for web-based learning

Web-based learning	Meaning unit
Because web-based education can be a powerful, liberating tool, or it can be a total waste of money if not properly administrated.	[9] Course content and presenters influences web-based learning
Yes, makes it possible for anybody now from anywhere in the world to study	[3] Transcends physical distance (space)
I feel one is able to overcome many of the previously mentioned disadvantages through shared understanding and communication.	[10] Preparation/ recommendation for web-based learning
I think students must be informed maybe like a Workshop, about the knowledge they would need because I had no knowledge I had to go out and… so maybe just to expose them to what they need, so they can prepare themselves not only technically but also emotionally. They must be willing to learn very quickly and I think a Workshop with just about the Introduction of the course will be good.	[10] Preparation/ recommendation for web-based learning [2] Initial acquisition of technical skills warranted
As I said that was one of the aspects that I did not give much thought to at the beginning of the year I did not realise that it would all come so quickly. At a Master's Level you are at a level where are given everything you must then give back and that is why I say you have to prepare emotionally and psychologically. That was one of the factors that was a bit difficult for me to handle at the beginning but I am feeling very comfortable now	[10] Preparation/ recommendation for web-based learning [6] Academic pressures
I would as I have just said a lot of different kind of people can adjust to it. I think that anybody can get something out of the web it is very flexible.	[10] Preparation/ recommendation for web-based learning [8] Positive attitude towards web-based learning

Web-based learning	Meaning unit
I would say it was a very good experience, and I have really learned a lot.	[10] Preparation/ recommendation for web-based learning [8] Positive attitude towards web-based learning
I think time management for me was a problem. If I look at H & S for instance, they just managed their time in such a way that they had time to watch TV for instance or go out or stuff like that. I'm not really a person who can manage my time very well. If I had to have it over, you know, have the year over; I would definitely have managed my time better.	[1] Poor time management [10] Preparation/ recommendation for web-based learning
Well, I personally had a lot of technical problems. My hard-drive crashed two times. I just went on. There's no two ways about, I just went on.	[2] Technical barriers
I love e-mail. I prefer it to chat room. In a chat room you have to respond immediately to someone. In e-mail you can take you time to think and type	[11] Preference for e-mail communication
I prefer e-mail (ipv telephone).	[11] Preference for e-mail communication
That's the problem with e-mail. On the telephone, the person can hear that you're not being sarcastic or rude. On e-mail you can't always see (tell).	[7, 11] lack of social cues in e-mail communication
They can interpret the message wrong (e-mail)	[7, 11] lack of social cues in e-mail communication
Put a smiley face at the end (interpreting message so as not to offend)	[7, 11] lack of social cues in e-mail communication
I think that it's the best invention ever (e-mail)	[11] Positive towards e-mail communication

Web-based learning	Meaning unit
Real time contact would have been better. What would have been even better, would've been seeing the person (webcam?)	[7, 11] lack of social cues in e-mail communication [4, 11] preference for real-time online contact
You have to know someone before you can understand their message	[7, 11] lack of social cues in e-mail communication [4] Building relationships online is important
Because you know them (personally) you understand their message	[7, 11] lack of social cues in e-mail communication [4] Personal contact enhances online interaction
Unless you have a lot of contact with them, get to know them (via e-mail to understand their messages)	[7, 11] lack of social cues in e-mail communication [4] Building relationships online is important
I learn their writing styles (know who wrote it). Each one has their own style	[7] Social cues in e-mail [4] Building relationships online is important
It's important to know who the message is coming from to put a face to an e-mail message (to understand the message)	[7, 11] social cues warranted in e-mail communication
Like social cues in a message that reveal the person because I like e-mail, but I like personal contact	[7, 11] social cues warranted in e-mail communication
The message (e-mail) would be more personal. I like the personal approach, but I prefer e-mail to personal contact.	[7, 11] social cues warranted in e-mail communication
Much more convenient (e-mail). More time to think (e-mail)	[11] E-mail is convenient

Web-based learning	Meaning unit
It's important to form a relationship with them (classmates) to understand them	[4] Building relationships online is important
(Social support via the web) E-mail them regularly to keep up to date	[4] Building relationships online is important
(Social support via the web) It's possible to maintain social support (via the web) but you have to make the effort	[4] Building relationships online is important
Preferred CD with the required information at the outset of the course.	[9] Course improvements
Waiting to download information is a schlep. You have to think of the telephone bill, you're not compensated	[2] Technical barriers [3] Cost-intensive
I would have preferred to have the Internet already (to rise above technical problems encountered during the course)	[2] Technical barriers [2] Initial acquisition of technical skills warranted
Would have liked to have skills (ito computers)	[2] Initial acquisition of technical skills warranted
You should definitely be computer literate	[2] Initial acquisition of technical skills warranted [10] Preparation/ recommendation for web-based learning
You should know how to do e-mail. You should know how to log on to the website	[2] Initial acquisition of technical skills warranted [10] Preparation/ recommendation for web-based learning
You should just be prepared to loose your friends because you are behind the computer the whole time	[10] Preparation/ recommendation for web-based learning [4] Decreased personal interaction [6] Academic pressures

Web-based learning	Meaning unit
I think it's very good (WBL)	[8] Positive attitude towards web-based learning
Wasn't as convenient and easy as I thought it would be (technical problems)	[2] Technical barriers
(WBL) Cheap, fast, easy, convenient, exciting, new. You fit into the information society	[8] Positive attitude towards web-based learning [3] Cost-effective [3] Convenient [3] Easily accessible [5] Opens new information doorways
Social contact is missing.	[4] Desire for personal contact
Those who like computers a lot will adjust more quickly	[2] Initial acquisition of technical skills warranted
Definitely (recommend WBL) but they should keep I web-based	[8] Positive attitude towards web-based learning
I would (recommend WBL) if it's combined with practical work, where you have occasional meetings with people	[8] Positive attitude towards web-based learning [4] Desire for personal contact
(Affected time-management) I thought that I'd have enough time, but in the end I had 10 assignments to do	[1] Poor time-management