Chapter 1
Introduction

1.1 Introduction

This is a case study focused on University of Pretoria (UP) students who completed an Online WebCT Experience Survey administered by the Department of Telematic Learning and Education Innovation (TLEI). The purpose of this study is to explore students' experiences of WebCT. The researcher will attempt to discover the challenges and benefits of web-based learning from the students' point of view.

1.2 Background of the study

The Department of Telematic Learning and Education Innovation aims to establish education excellence at UP through flexible learning. TLEI is a support service for lecturers at the University of Pretoria. Since 1999 some modules have been offered through flexible learning using a Learning Management System called WebCT (TLEI Annual Report, 2003).

The University of Pretoria has provided flexible learning through contact and web-based learning. The new educational model of flexible learning which accommodates both face to face and web-based learning is based on the impact of technology and flexible needs of learners (TLEI: Facilitation of e-Learning Manual, 2004).

UP is contact university but it also provides web-based learning to students' on-campus and off-campus. Students on and off-campus can regularly access their class notes and communicate with the lecturers and peers through WebCT. Lecturers will continue with their normal day-to-day lecturing while they also make use of WebCT to upload class notes and other presentations. However, it is also important to determine how students experience web-based learning at the University.

1.3 Research Problem

The research problem is to explore students' experiences of WebCT. It is important to find out how students benefit from the web-based modules that are offered at the University. The research will focus on benefits and challenges identified by students who completed the WebCT Experience Survey.

1.4 Research Questions

The aim of the research is to explore students' experiences of WebCT. To explore the research aim the researcher addresses the following critical questions:

- How do students benefit from WebCT?
- What are the challenges when students use WebCT?

The focus of the research used the open-ended questions which provide detailed exploration of benefits and challenges for students using WebCT. The WebCT Experience Survey, administered by the Department of TLEI, was used to explore student experiences of WebCT. The WebCT Experience Survey includes both qualitative and quantitative data of the research. The focus of this research is the qualitative information, which includes open-ended questions.

- **Question 31**

"What were the positive aspects you experienced during your web-supported courses? (Please answer in point form and limit your response to a maximum of 4 points.)"

- **Question 32**

"What were the negative aspects you experienced during your web-supported courses? (Please answer in point form and limit your response to a maximum of 4 points.)"

1.5 Importance of the study

The research is based on the experiences of students about WebCT and the results of the study will benefit the TLEI in various ways, which includes:

- Providing guidelines for the lecturers to utilize WebCT effectively

- Help lecturers to facilitate web-based learning
- Providing better services to the clients
- Make recommendations for improved use of WebCT at UP.

UP has previously conducted research regarding web-based learning. The following researchers conducted research to determine the use of WebCT at the University: De Bruyn (2003) conducted a study in evaluation of students' learning experiences through web-based course. Greyling's (2003) study focused on the use of WebCT to support e-learning in the Department of Industrial and Systems Engineering at the University of Pretoria. Delport's (2003) study was based on the investigation of the use of Computer-Mediated Communication in undergraduate Mathematics courses at the University of Pretoria. Fresen (2005) also conducted an exploratory study on quality in web-supported learning in higher education.

I would like to focus my research on the open-ended questions from the WebCT Experience Survey and learn about some of the benefits and challenges of using WebCT. This study provides a detailed exploration of students' experiences about WebCT. The findings from this research will be useful to TLEI staff especially instructional designers, students and the academic staff who offer web-based modules.

1.6 Flexible learning

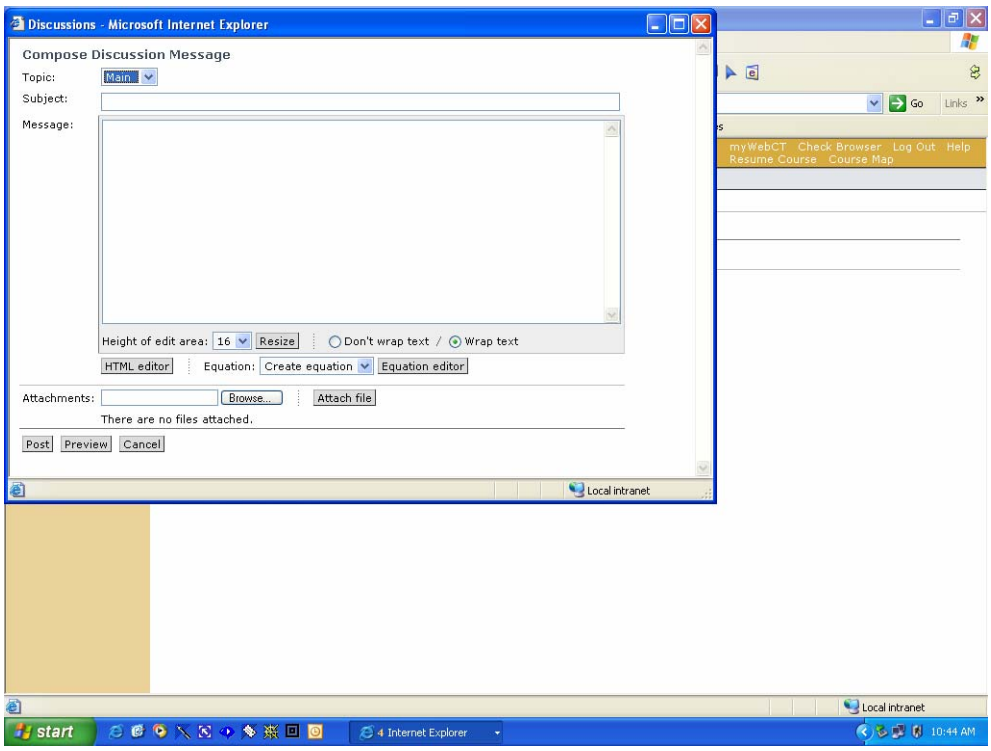
The new demands on higher education have resulted in flexible learning. The traditional modes of delivery did not accommodate diverse learning styles of students and there was a need for the kind of delivery that will accommodate all students irrespective of time and space. Both Mason (1994) and Race (1998) believe that the use of communication media in flexible learning offers feedback, support, motivation and interaction. Mason (1994) believes that flexible learning encourages social interaction between students because in flexible environment students interact and carry out tasks collaboratively. According to Mason (1994), flexible learning encourages experiential learning in the sense that students can learn while performing the task at hand.

Van den Brande (1993) believes that flexible learning enables students to learn when, how and what they want from flexible learning environment. TLEI offers web-based modules for students at UP. Web-based courses allow students to work at their own pace and time.

Belanger and Jordan (2000) believe that web-based learning is much more learner centered as students take the responsibility for their own learning. With web-based learning students can access their WebCT modules anywhere, anytime around the world provided they have access to the Internet.

Through the use of communication tools available in WebCT students can communicate with their classmates and the lecturer responsible (See figure 1.1). The following communication tools are available in WebCT for students to communicate with each other and with the lecturer (WebCT, 2004):

- Email
- Discussion
- Calendar
- Chat.



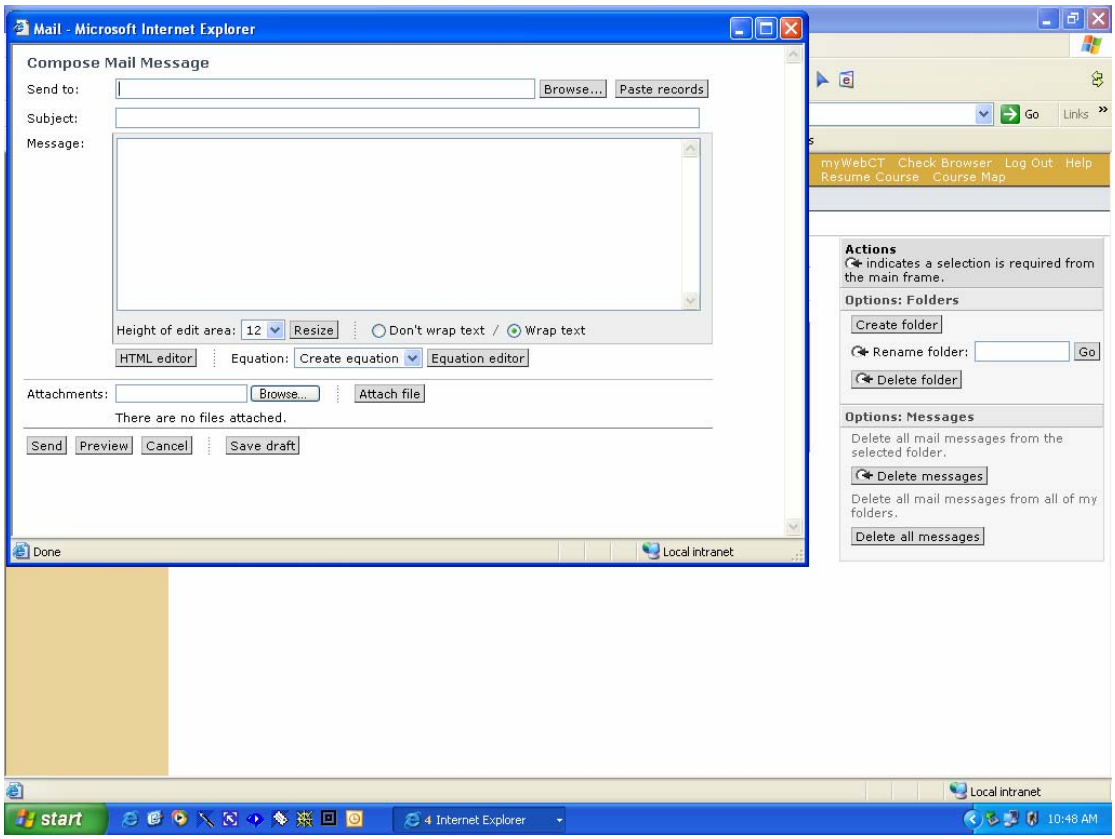


Figure 1.1 WebCT Communication tools
** Adapted from WebCT*

Students can now reflect on their own learning. For example, through the discussion tool students are encouraged to give their own opinion with regard to the content and the module being studied. They can also use the discussion tool to post messages to other students and the lecturer. The role of both lecturer and student has changed in this new web-based learning environment.

Student support systems should be available for students experiencing problems in distance and flexible learning environments. TLEI offers both staff and student training to use web-based technologies. Brooks, Nolan and Gallagher (2001) emphasize that the technical terminology that the lecturers use is usually difficult for novice students to understand. It is advisable for presenters to define terms that might be unknown to students. Some students who are not computer literate might have problems understanding the differences between the hardware and software programs. The terms should be explained briefly for first time users when using technology.

1.7 Limitations

There are a number of limitations that should be noted for future research such as this. The limitations stated below may have restricted the results of the study in number of ways. The following limitations of the research should be noted:

- The researcher should validate the results by using various data collection method
- Not all students could access the WebCT Experience Survey: those who do not have Internet access could not complete the survey
- The research only involved students from the University of Pretoria
- The researcher will not claim generalisability but will rather contextualize the study
- The sample size was limited as only a few students responded to the open-ended questions of the survey.

1.8 Terminology

The list of terms that have been used in the study are explained in Table 1.1. The terms include flexible learning, distance education, synchronous communication, asynchronous communication, WebCT, outcomes-based education and formative evaluation.

Table 1.1 Terminology

List of Terms	Description
Flexible learning	Flexible learning is learner centred education where students have choice in terms of time and place of learning. Calvert (1998) in Jakupec and Garrick (2000) describes flexible learning as an approach to education that focuses on the needs of students and design of learning environment.
Distance education	"Transaction (Distance Education) is the interplay between people who are teachers and learners in environments that have special characteristics of being separate from one another and a consequent set of special teaching and learning behaviors" (Moore and Kearsley, 1996).
Synchronous communication	Refers to real time communication where students login simultaneously to post messages (WebCT, 2004). Chat room is an example of the tool.
Asynchronous communication	The kind of communication where there is a delay in answering the messages (WebCT, 2004). An example would include the Discussion and E-mail tool.

WebCT	Web Course Tools. WebCT is a Learning Management System used at the University of Pretoria to deliver course material online (TLEI Annual Report, 2003).
OBE	Outcomes-Based Education is defined by MacDonald and Van der Horst (1997) as an approach that requires teachers and students to focus their attention on desired end results of each learning process.
Outcomes	Outcomes are clear learning results that students should be able to demonstrate at the end of learning experience (Spady, 1994). This refers to the results that lecturers expect from the students after they have completed their work.
Formative evaluation	Evaluation that is conducted in the early stages of the program and examines the process rather than the product (Hannafin and Peck, 1988).

The above terms are defined for the purpose of this study. It is important to understand the description of flexible learning, distance education, synchronous communication, asynchronous communication, WebCT, outcomes-based education and formative evaluation as the terms are applicable to web-based learning research.

1.9 Division of chapters

Chapter 1 will give the introduction and overview of the study. Chapter 2 will review the literature study about web-based learning and discuss different models applicable to flexible learning. Chapter 3 will discuss research methodology and data collection methods, Chapter 4 will present the analysis and findings of data while Chapter 5 will draw conclusions and make recommendations of the study. The chapters are diagrammatically represented in Figure 1.2.

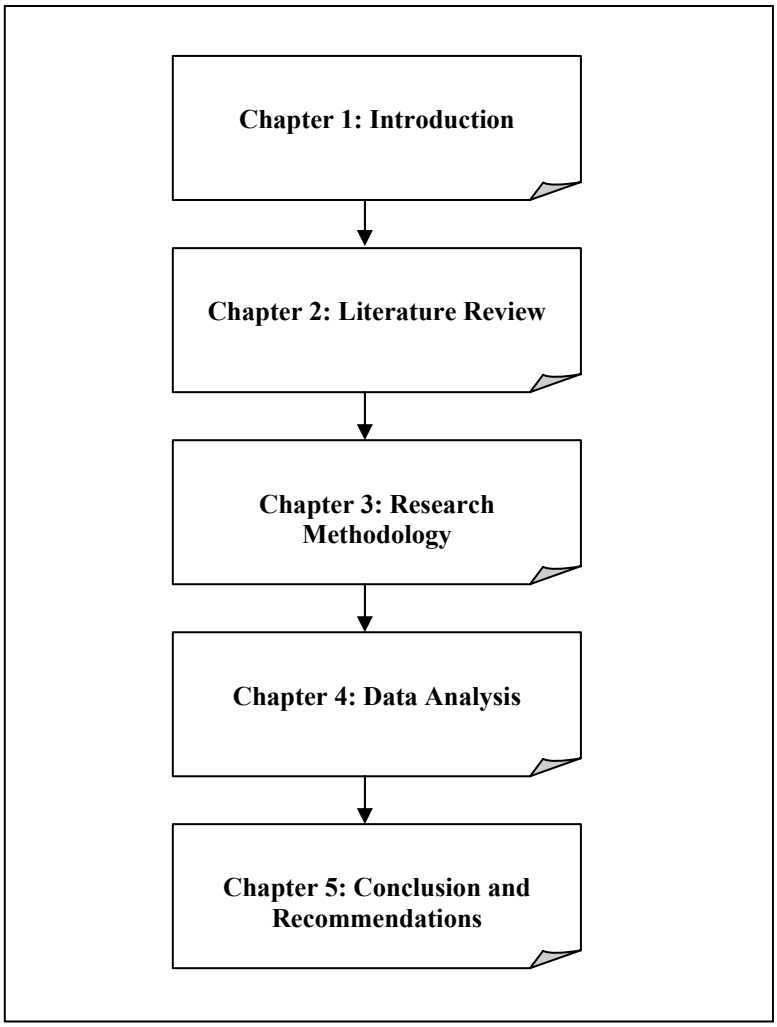


Figure 1.2 Division of chapters

1.10 Summary

The purpose of this chapter was to give an overview and background of the study. The research questions, importance and limitations of the research were also given in this chapter. Chapter 2 will review the literature on web-based learning and students' experiences of WebCT.

Chapter 2
Literature Review

According to Moore and Kearsley distance is not determined by geography but by the way and the extent learners, instructors and the learning environment interact with one another. "Transaction (Distance Education) is the interplay between people who are teachers and learners in an environment that have the special characteristics of being separate from one another and a consequent set of special teaching and learning behaviors" (Moore and Kearsley, 1996).

2.1 Introduction

Flexible learning refers to a mixed mode of learning that includes contact and distance education. The mission of TLEI is to establish a flexible learning environment in order to address the educational needs of its clients (TLEI Report, 2003). Flexible learning has different meanings to different people.

Erlendsson (2003) states that "flexible learning expands choice on what, when, where and how people learn". Burgess (2004) agrees with Erlendsson (2003) in terms of this flexible learning definition, Burgess (2004) regards flexible learning as an approach which gives students control over what, when, where and how they learn. Greenway, Heart and Narayanaswamy (2002) explain flexible learning differently as they regard flexible learning as an "approach that builds upon traditional face to face methods and distance education practices". Greenway et al. (2002) regard flexible learning as a blended approach because they believe that both face-to-face learning methods and distance education practices are considered. In all the definitions above the main focus and priority is on the student control.

The following strategic objectives of the Department of TLEI support the use of flexible learning technologies at the University (TLEI Report, 2003):

- Rendering support to undergraduate modules using appropriate ICT and
- Ensuring that all postgraduate programmes are available for students on the web.

In order to realize these objectives UP implemented WebCT as a Learning Management System (LMS) in 1998 to support staff at the University with various services (TLEI Report, 2003):

- Instructional Design
- Web supported learning
- Multi media
- E-Testing
- Graphic Design
- Audio Visual Services
- Photographic Services
- Educational Technology Support.

In 2002 approximately 630 modules were developed for this platform. In 2003 the number rose to 1 067 modules with 21 200 students enrolled (TLEI Report, 2003). The number of modules in WebCT is increasing every year, which means that it is likely that more students are using WebCT to access their web-based modules.

In 2003 a new improved WebCT version 4.1 was implemented which provided more improved functionality. The Students and Lecturers Online services were also improved to be compatible with the new IT strategy (TLEI Report, 2003).

2.2 Flexible learning model at the University of Pretoria

In 1997 UP Management accepted a new educational model of flexible learning which accommodates both face-to-face and web based learning (TLEI Report, 2003). The model is based on two factors as seen in Figure 2.1:

- Impact of technology and
- Flexible needs of learners.

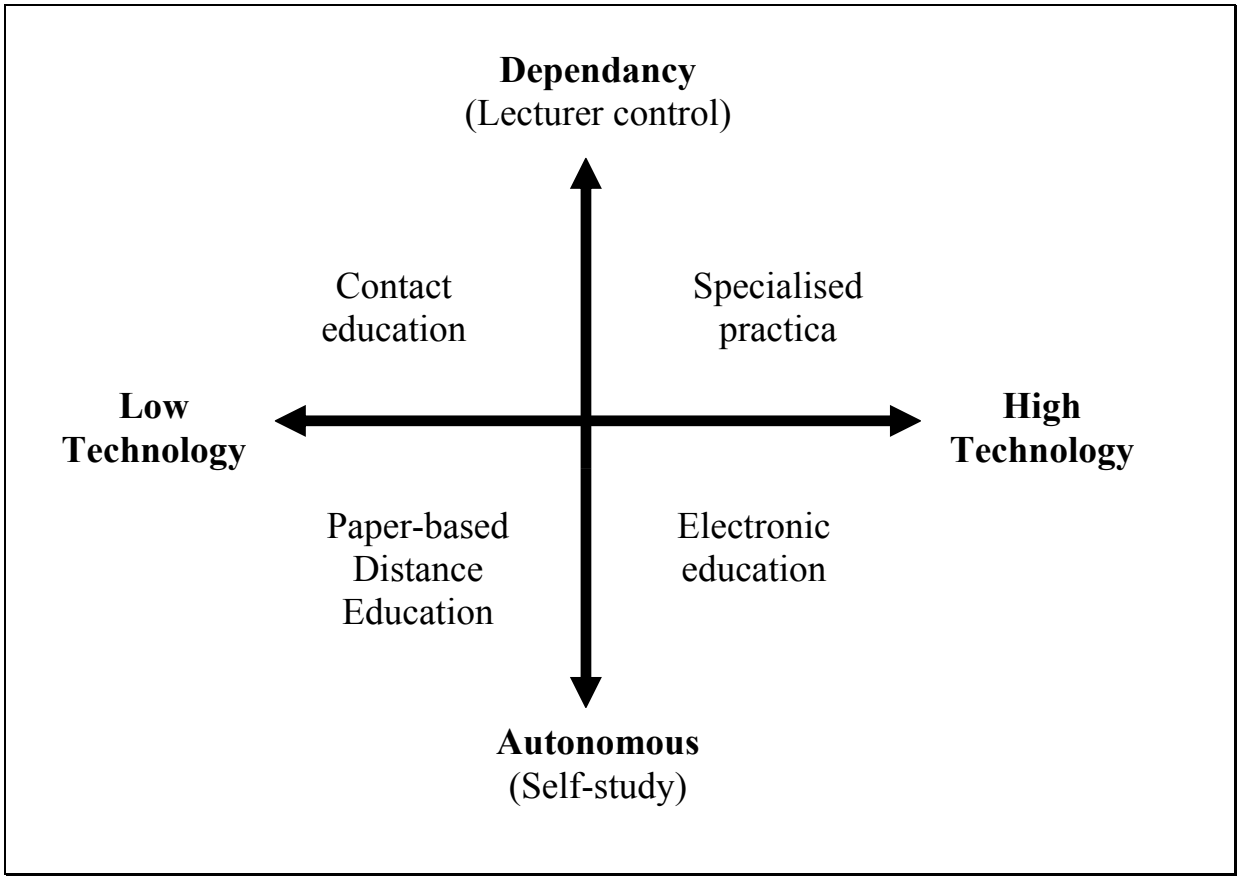


Figure 2.1 Education model
**Adapted from TLEI: Facilitation of e-Learning Manual (2004)*

The education model at the University of Pretoria accommodates both off-campus and on-campus students. Each quadrant represents a primary education mode namely: contact, paper-based, electronic and specialised practical training. The students have the opportunity to access printed materials and electronic material through WebCT or CD-ROM and other electronic formats (TLEI: Facilitation of e-Learning Manual, 2004).

The on-campus students are also accommodated as lecturers present their lessons to students attending face-to-face classrooms. This kind of interaction has resulted in a flexible learning model where students with different learning styles are accommodated.

2.3 Rogers' diffusion of innovation

Orr (2003) describes diffusion as "the process by which an innovation is communicated through certain channels over time among members of a social system". According to Orr (2003) all members of society have their own innovation decision that follows some steps. WebCT can be regarded as Learning Management System which has been adopted by the

University of Pretoria. Different faculties use the Learning Management System to facilitate learning and students have different opinions regarding WebCT.

Geoghegan (1995) made a distinction between early adopters and laggards. According to Geoghegan (1995) early adopters are those people who accept change quickly. There are some differences between the early adopters and the laggards. The following characteristics have been identified as listed in Table 2.1.

Table 2.1 Distinction between early adopters and laggards

Early adopters	Laggards
Risk takers	Risk averse
Self sufficient	Need support
Work across boundaries	Work within boundaries
Visionary	Pragmatic
Revolutionary change	Evolutionary change
Horizontal	Vertical

**Adapted from Geoghegan (1995)*

Unlike Geoghegan (1995) who made distinction between early adopters and laggards, Rogers (1995) identifies five groups of people in Innovation as listed in Table 2.2:

- Innovators
- Early adopters
- Early majority
- Late majority
- Laggards.

Table 2.2 Rogers' types of innovations

Innovators	Early adopters	Early majority	Late majority	Laggards
Eager	Role models	Skeptical	Interact frequently with peers	Traditional
Risk takers	Leaders in society	Cautious	No leadership skills	Isolated

**Adapted from Orr (2003)*

Students differ with regard to their acceptance of innovation. Some students regard WebCT as being beneficial because of advantages that they have identified and some will not realize the benefits of using WebCT depending on their experiences. Students will accept innovation if it brings about positive changes to their learning.

2.4 Moore's theory of transactional distance

Moore's theory of transactional distance can be used to identify factors constituting transactional distance in a learning environment. This statement was emphasized by Chen (2001) who conducted research to investigate students' experiences with the World Wide Web. The four dimensions of Moore's theory of transactional distance are (Chen, 2001):

- Instructor: learner
- Learner: learner
- Learner: content
- Learner: interface transactional distance.

According to Moore and Kearsley (1996) distance is not determined by geography but by the way and the extent learners, instructors and the learning environment interact with one another. "Transaction (Distance Education) is the interplay between people who are teachers and learners in an environment that have the special characteristics of being separate from one another and a consequent set of special teaching and learning behaviors". Moore's model (1989) was originally made up of three types of interaction and the fourth one was added later as seen in Table 2.3.

Table 2.3 Moore's model

Interaction	Description
Learner: instructor	That is the interaction where the teacher motivates the learner and gives feedback. This occurs when the teacher communicates with the learner. In an online environment this occurs when the instructor communicates with the students via the different communication tools available in WebCT. The interaction could also be adapted to face-to-face interaction where students and instructor communicate verbally in the classroom situation.
Learner: content	This occurs when the learners engage with the learning material and obtain intellectual information. The web offers the students with opportunity to engage with the learning material. The content presented on the web differs according to the needs of the instructor. Some WebCT modules provide course material through the content

	module tool, single Portable Document Format (PDF) study guide or other formats.
Learner: learner	That is the interaction when the learners communicate with each other and discuss the learning material. In a web-based environment learners can communicate using the email, chat or discussion tool. Learners can exchange ideas and argue about the content. The web provides students with the opportunity to communicate about their course and other important issues covered in the course.
Learner: interface	The fourth type was added by Hillman, Wills and Gunawardena (1994). The interaction is more appropriate for students who have web-based modules. The focus is more on the interaction that the students have with the learner interface. With regard to WebCT this will apply when students access their WebCT module and interact with the computer, lecturer and fellow students. The interface could also include the navigation where students can move around and click on appropriate links on the course menu.

**Adapted from Moore (1989)*

The four dimensions of Moore's model can be adopted for web-based learning. In WebCT the students can communicate with the lecturer using various communication tools. The learner – content interaction occurs when the students' access the information and class notes uploaded in WebCT. Through WebCT students can communicate with each other using the discussion tool, email tool and the chat room. The interface interaction is made possible when the students logon and access their web-based modules. The above-mentioned dimensions are applicable for web-based learning.

2.5 Gartner's hype cycle

According to Gartner (2005) the hype cycle is "an educational tool that helps explain why technologies should be adopted". Such a hype cycle shows people how to adapt to certain technologies. Gartner's hype cycle has been used to show how new technologies move and are accepted by the new users (Gartner, 2005). The hype cycle is made up of five phases as described in Table 2.4.

Table 2.4 Gartner's hype cycle

Phase	Description
Technology trigger	This is the first phase of the cycle. It is the breakthrough of the new product. The product is demonstrated to the public for the first time during this phase. In web-based learning that is the period when the vendors come to demonstrate the product to interested users. Students do

	not usually have a say at this stage.
Peak of inflated expectations	This is the phase when users have unrealistic expectations. The reason could be attributed to the fact that at this stage the users are not familiar and aware of all the pros and cons of the product. With WebCT this will be stage when students and lecturers are excited about using the new technology.
Trough of disillusionment	During this phase the users become disappointed if the product does not deliver what it was supposed to deliver. The users will ignore or disregard the product if their needs are not met.
Slope of enlightenment	If users put effort into understanding the product this could result in enlightenment. The users will see the applicability and benefits of the product. The problems experienced in phase 3 will be slowly resolved. This means that if students experienced problems with the new product, they will seek some help and support which will result in positive thinking about the product.
Plateau of Productivity	At this stage the technology becomes accepted and stable. The students will now be able to see the benefits and challenges of the new product. The students who are familiar with WebCT know the benefits and challenges of the product.

**Adapted from Gartner (2005)*

Gartner's hype cycle is represented in Figure 2.2. The hype cycle usually shows the emerging technologies and how they move beyond the hype. The cycle can also show how people use or adopt certain technologies.

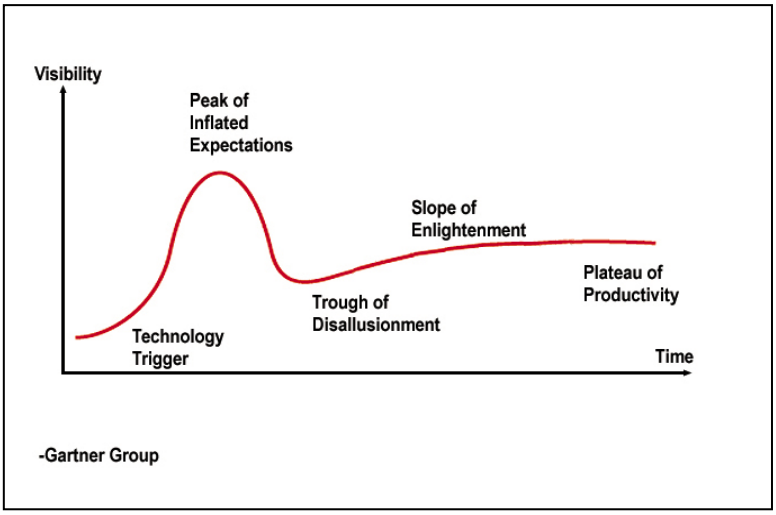


Figure 2.2 Gartner's hype cycle (Klau, 2001)

The hype cycle shows how new technologies move and are adopted by people. Roger's diffusion of innovation focused on how different people adopt to new technologies and Gartner focus on the move of the technologies or innovation. The next section will compare Gartner and Rogers stages of adoption.

2.6 Stages of adoption

Rogers (1995) identifies five stages of adoption that has similar characteristics as Gartner's hype cycle. The five stages identified are listed in Table 2.5 namely:

- Awareness
- Interest
- Evaluation
- Trial
- Adoption.

The above-mentioned stages have some similarities with Gartner's hype cycle (Gartner, 2005)

- Technology trigger
- Peak of inflated expectations
- Trough of disillusionment
- Slope of enlightenment
- Plateau of productivity.

Table 2.5 shows the comparison between Gartner and Rogers stages of adoption. There are some differences and similarities between the Gartner's hype cycle and Rogers' stages of adoption.

Table 2.5 Stages of Adoption

Stages of Adoption	Description
Awareness	During this stage the individual does not have enough information about the new idea/ product. The innovation is introduced to the individual with the person not knowing much about innovation. This stage could be similar with Gartner's hype cycle phase "Technology trigger". This is the period during which the new product is introduced. In both cases the individual does not know about the product.
Interest	During this stage the individual becomes interested in the product and tries to find as much information as possible. This is the time that the individual will not want to know the possibilities of

	adapting the new product. This is a different to Gartner's phase 2 because that is where users have unrealistic expectations. They are not aware of the advantages and disadvantages of the product.
Evaluation	Rogers' third stage of adoption is evaluation. During this stage the individual has all the necessary knowledge and can decide if the innovation will be relevant or improve the situation. It depends on the individual to accept or reject the innovation. In Gartner's cycles that correspond with the Disillusionment phase where users have the choice to adopt or disregard the innovation.
Trial	The fourth phase of the diffusion is trial phase during which the individual has all the necessary knowledge. The individual at this stage knows what works and what does not about the product and this is similar in Gartner's Slope of Enlightenment during which the individual makes sense and tries to fully understand the product. During the trial or Slope of enlightenment users are familiar with the product.
Adoption	With Adoption the individual has full understanding and decides to continue to use the innovation. With Gartner's Plateau of productivity the individual accepts the product and learns to live with the new product.

**Adapted from Rogers (1995) and Gartner (2005)*

The table above shows that the stages of Rogers can be grouped together with Gartner's hype cycle. The following can be grouped together:

- Awareness: Technology Trigger
- Interest: Peak of Inflated Expectations
- Evaluation: Disillusionment
- Trial: Slope of Enlightenment
- Adoption: Plateau of Productivity.

The above table and bulleted list shows clearly how the stages of adoption can be compared with Gartner's hype cycle to show how people adopt to the new technologies.

2.7 Advantages of web-based learning

The University of Pretoria has provided flexible learning opportunities through contact, paper based, multi media and web-based learning (TLEI Report, 2003). Through the use of multi media products and web-based learning students are encouraged to learn at their own pace and time.

Flexible learning accommodates on-campus and off-campus learners. Lecturers continue with their normal day-to-day lecturing while they also make use of WebCT to upload class notes and other presentations. It is important to find out how students experience web-based learning at UP and the advantages will be discussed according to different institutions and people who have used WebCT.

According to Orange and Hobbs (2000) the web enables students to access learning material at their own time and pace. This means that students all over the world can access information on the web provided that they have access to the Internet. They also believe that the web accommodates students with their own individual needs.

Sparnon (2004) identifies own pace as the advantage of web-based learning as students can study at midnight and communicate ideas with fellow students. The other advantage mentioned by Orange and Hobbs (2000) is a simple and familiar interface. They both regarded the interface of WebCT as being easy to navigate. Selinger and Pearson (1999) also agree with Orange and Hobbs (2000) about interface, which is user friendly. Lau (2000) identifies the following advantages of the web as seen in Table 2.6.

Table 2.6 Advantages of the web

Advantage	Description
Convenience	Both Lau (2000) and Orange and Hobbs (2000) emphasize convenience as main factor in learning online learning. Students can access material when and where they choose. There are no time or place boundaries.
Collaborative learning	The web also allows and encourages collaborative learning. Students from diverse cultures can interact with each other.
Communication	It also allows for synchronous and asynchronous communication modes. WebCT allows students to communicate using the email, chat room or the discussion tool.
Student control	The web allows students to have control and responsibility towards learning.

Web-based learning allows students to access information at any time. This statement is supported by Orange and Hobbs (2000). The students are given the responsibility for their own learning. Both Lau (2000) and Orange and Hobbs (2000) identify access at own time as being the benefit of using the web.

According to Mercadante (2002) there are different reasons why teachers should incoporate technology in their teaching. Mercadante (2002) states that technology:

- Accommodates various learning styles
- Facilitates communication
- Improves the quality of content delivery
- Helps in dealing with diversity of students
- Makes learning available to more people
- Enables formation of community.

For technology to work, faculty needs to work as a team. Faculty members should support each other in using technology. It is important that the lecturers who are more familiar with certain technology give support to the other members who are unfamiliar with technology. There should also be student assistants, tutors and technical support staff available at all times to support students and instructors problems with technology (Mercadante, 2002).

Victoria University identifies three models for Online Learning as indicated in Table 2.7.

Table 2.7 Models for online learning

Models for online learning	Description
Mixed mode	face to face and online
Fully online mode	online, text, audio, video
Supplementary	face to face with optional online

**Adapted from Inglis (2004)*

The different models for online learning accommodate students with different learning styles. Every student has needs and it is important that the model used for online learning accommodate majority of the students. Institutions use different learning models depending on the needs of their students.

The Centre for e-Learning Development Information Services (2003) identifies the following benefits of using WebCT as listed in Table 2.8.

Table 2.8 Benefits of using WebCT

Advantages of using WebCT	Description
Increased IT skills	Both students and lecturers using WebCT are increasing their skills in web-based learning.
Flexibility	Students have the opportunity to study anywhere at their own pace and time.
Re-usable learning materials	The materials used in one module can easily be adopted for use in other modules.
Integration of electronic resources	Through WebCT a number of electronic resources can be brought together in one place. That enables students to learn more effectively.

**Adapted from CeLD (2003)*

WebCT gives students the opportunity to communicate with the lecturer and raise the uncertainties that might arise during the discussion. Students are able to communicate freely any problem they might experience. According to CeLD (2003) WebCT increases the skills level of users so, both the lecturers and the students benefit from using WebCT.

Rosenberg (2001) identified some areas that need to be transformed with regard to learning. There are five major areas of transformation identified by Rosenberg in Table 2.9.

Table 2.9 Areas of transformation

Areas of Transformation	Description
Training	Performance
Classroom	Any time/ Anywhere
Paper	Online
Physical facilities	Networked facilities
Cycle time	Real time

**Adapted from Rosenberg (2001)*

The above areas of transformation could be applied to transformation in learning that is occurring in higher institutions. Most institutions are adapting web-based learning to accommodate the needs of the students. Such areas are described below:

- **Outcomes**

  According to MacDonald and Van der Horst (1997) outcomes refer to the effect of learning process. That includes knowledge, skills, attitudes and values. The focus now is on performance of the individual instead of training. The student skill is more important than training acquired (Rosenberg, 2001).

- **Access**

  People want to learn at their own convenience. It is important that the learning material is available twenty four seven for those students that are working. Students should be able to access their learning material anywhere, anytime. With WebCT students can access their modules anytime provided they have access to Internet (Rosenberg, 2001).

- **Online**

  The advantage of using online information is that information can be easily updated. Information on the web is dynamic and it can easily be updated for students. Kouki and Wright (1999) stress that the advantage of using the web is that the information is dynamic. That means lecturers can update the information at any time. The use of hyperlinks also allows students to browse and search easily.

- **Networked facilities**

  Most companies are trying to link their facilities and their people through the Internet. Through intranet people working in the same environment can easily distribute information among themselves and share ideas about their work (Rosenberg, 2001).

- **Real time**

  Students have different needs and the lecturers need to adopt learning content to the needs of students. Schrum and Berenfeld (1997) encourage educators to plan their educational experiences that promote active learning and engage students in the learning process. With WebCT the lecturers can use the chat room to have real time communication with the students. Through synchronous communication tools real time can be possible in education.

2.8 Case studies

In web-based learning students should always get support for academic and technical problems. Students will be encouraged to learn using WebCT if they know the steps and procedures to be followed. Some students might be discouraged to use the web because they are unable to login to the course. There should be Help Desk to assist students with problems.

The University College of the Cariboo (2005) identifies common problems that students usually have with WebCT. Same problems were experienced at University of Wollongong (2004) as seen in Table 2.10.

Table 2.10 Common problems that students have with WebCT

Common problems with WebCT	Description
Login problems	Students are sometimes unable to get access to the course because of login problems. Students are encouraged to read the instructions on the screen carefully. To access the course students are required to login with their id/ username and type in their password. Students should be reminded that the usernames and passwords are case sensitive.
Forgotten passwords	Students are encouraged to contact the WebCT Administrator to reset their passwords.
Access	Students are sometimes unable to access their course because of incorrect passwords. It is important that students memorize their usernames and passwords to prevent access problems. The IT Department can be contacted if students get the "login server error" or the "internal server error".
Students can't see Content Module files	The reason could be that the designer or instructor of the course did not update the course for students. When using content module in WebCT the instructor should always update student's view for the students to see the changes or the class notes added.
Download files	Students are usually unable to save/ download files to their hard drive because they do not know the steps to follow. The instructor should give students the steps to follow when downloading files in WebCT. If the document is saved in PDF the students should use the icon available in the document.
Print files	Students are unable to print Acrobat PDF because they are not familiar with pdf. Instructors should show students the important icons that they will use in WebCT. The students should also have access to Adobe Reader to be able to view some content.

**Adapted from University College of the Cariboo (2005) and University of Wollongong (2004)*

The University College of the Cariboo (2005) and University of Wollongong (2004) have identified the following as common problems about WebCT. The problems include password problems, logon problems, access problems and download problems. Some of the students had problems downloading the files in WebCT and the problems were experienced mainly when students had to print PDF.

The Connecticut Distance Learning Consortium (CTDLC) experienced some problems with WebCT and that includes the popup blockers and browsers as seen in Table 2.11.

Table 2.11 Problems experienced with WebCT

CTDLC	Description
PopUp blockers	If the user is running the PopUp blocking software and that causes problems with WebCT then the PopUp blocker should be off.
Browsers	Students have problems accessing their courses because of unsupported browsers. The user should use the latest browser that works well with the latest WebCT version. Students should be advised to get the latest versions. Some of the versions are freely available on the Internet.

**Adapted from CTDLC (2005)*

Students who experience problems with browsers should be advised to download the latest versions that are available on the Internet. The most commonly used browser includes:

- Internet Explorer™
- Netscape™
- Mozilla™.

Selinger and Pearson (1999) identify the following problems in web-based learning as listed in Table 2.12. Students usually complain about access to the Internet and server being down. The problems are identified in the table below.

Table 2.12 Problems with WebCT

Problem	Description
Technology	Technology can be a source of failure if students are not well guided. The interface should be user friendly so that students can navigate by themselves (Selinger and Pearson, 1999).
Access	Another factor that causes failure of technology is the lack of convenient access to the equipment. Most people are resistant to technology because they do not have the necessary access to the technology (Selinger and Pearson, 1999).
Need	Students need to be encouraged to use logon to WebCT. If students do not see the need it will be difficult for them to access the web if they are not motivated to use the web.
Learning styles	Lau (2000) identifies the fact that different students have different needs and should try to accommodate the different students in learning.
Training	Lau (2000) students need to be trained in using the new technology. Their readiness also differs because some are not willing to change the way they are accustomed to learning.

Students using WebCT should be trained properly regarding the login steps to WebCT. The lecturer responsible should arrange for student training with the people responsible for training students in WebCT.

UP research has been conducted regarding web-based learning. The researchers below conducted research to determine the use of WebCT at the University. Greyling (2003) and Fresen (2005) used a sample of lecturers and students to conduct their research while Delport (2003), De Villiers (2000) and De Bruyn (2003) concentrated more on the student responses as seen in Table 2.13.

Table 2.13 WebCT at the University of Pretoria

Researcher	Investigation
De Bruyn (2003)	Conducted a study in evaluation of student's learning experiences through web-based courses. The effectiveness of web-based courses was measured using Chickering and Gamson's seven principles as the framework. The researcher concentrated on the positive aspects that students indicated regarding WebCT. The results indicated that students benefited from online modules and they needed more communication with the lecturer. Few problems were identified with regard to WebCT. Examples included download times and full laboratories. According to De Bruyn (2003) the students were considered to be more ready for acceptance of technology than were the lecturers. There is a need to support lecturers in the use of the Learning Management System (De Bruyn, 2003).
Greyling (2003)	Focused on the use of WebCT to support e-learning in the Department of Industrial and Systems Engineering at the University of Pretoria. The research aim was to determine the effective use of WebCT in the Department. The researcher conducted interviews with lecturers using WebCT in their Department. TLEI WebCT survey was used to obtain results among 386 learners. According to Greyling (2003) the lecturers and students had positive experiences regarding WebCT. The positive experience had an influence on communication between learners and lecturer and amongst learners themselves.
Delport (2003)	The study was based on the investigation of the use of Computer Mediated Communication in undergraduate Mathematics courses at the University of Pretoria. The general objective of the study was to evaluate the significance of web support (CMC) in mathematics learning. The hypothesis was that there is a relationship between active use of communication tools in web supported mathematics modules and learning principles. The researcher conducted a quantitative study. The following conclusions were made: (Delport, 2003) • Higher order thinking is related to Computer Mediated Communication • The learner takes control with active use of chat facility • A varied learning environment is related to lecturer involvement and CMC. The researcher focused mostly on Communication tools.
De Villiers (2000)	Focused on asynchronous web-based technologies to support learning. The researcher concluded that web-based technologies could support learning depending on the needs and characteristics of the target group. The study focused on three case studies: • Educational website in the classroom: the web was used as

	supplement to traditional contact teaching • Web based CMS which focused on communal use of the web • Web based classroom with no contact (De Villiers, 2000).
Fresen (2005)	Conducted an exploratory study on quality in online (web-supported) learning in higher education. The research was focused on the following questions: • Factors that promote quality of web-supported learning • Client satisfaction with web-supported learning (lecturer, student) • Instructional design process used to develop the Quality Management System for web supported learning. Fresen (2005) conducted her research with students and lecturers at the University of Pretoria. The lecturer's survey concentrated on the level of their satisfaction with web based learning and about 22 lecturers were interviewed in February 2004. The WebCT Survey was administered in 2003 and the response was completed by 4650 students. The lecturers were satisfied with WebCT but they indicated that there were few technical problems with the system (Fresen, 2005).

The studies reviewed concentrated more on the closed questions that indicated quantitative data. The current research focus will be on the qualitative data. Students' experiences about WebCT will be explored and that will include the benefits and challenges of using WebCT.

2.9 Cultural issues in online learning

Lanham and Zhou (2003) conducted research in Australia that shows that students from different cultures differ with regard to compatibility with different learning environments. The following distinction was made regarding student needs and beliefs on learning as seen in Table 2.14.

Table 2.14 Cultural differences

Cultural groups	
Singapore Face-to-face interaction. They prefer discussing their assignments face to face.	**Australian** Online communication. The Australian students preferred online communication between students and instructor.
Finnish Reserved: they only respond when they have something worthwhile to contribute.	**America** Talkative: they are free to say what they want.
Australian Preferred student-centered environment.	**Asians** Traditional instructor-centered approach.

**Adapted from Le Baron, Pulkkinen and Scollin (2000)*

Students have different needs and preferences. The students from Singapore preferred face-to-face interaction to online interaction. The students have some similarities with the Asians because they also preferred a traditional instructor centered approach (Le Baron et al., 2000). With flexible learning students with different needs can be accommodated because a flexible learning environment allows students to learn at their own time. Students are encouraged to be responsible for their own learning, which means everyone takes responsibility for their own learning.

Nielson (1996) in Lanham and Zhou (2003) identified some issues to be considered when dealing with cross-cultural audiences as listed in Table 2.15.

Table 2.15 Issues in cross cultural audience

Aspect	Description
Use of icons	It is important to consider the icons that are used for websites. For example, a pointing finger could be offensive to other cultures while other see the icon as instruction to perform a specific task.
Metaphors	Could be understood clearly by local students but the other students might have different meaning attached.
Design and layout	The design should be appropriate for the target group.
Interface	The interface that is easy to use makes students comfortable with the learning environment. This is more important for online learning because students need to access their modules regularly to keep up to date.

**Adapted from Nielson (1996)*

The role of student and that of lecturer has changed in flexible learning. Flexible learning requires students to be active role players and work cooperatively with each other. Students are encouraged to ask questions and use critical and creative thinking in solving problems.

2.10 Summary

This chapter has reviewed some literature on web-based learning. The students' experiences with regard to benefits and challenges of web-based learning were discussed. The flexible learning model at the University of Pretoria and its relevance to UP students was highlighted. Moore's theory of transactional distance was highlighted and how the theory relates to WebCT. Gartner's hype cycle was compared to Rogers stages of adoption and the stages were grouped together to show how people adopt to new technologies. The next chapter will focus on the research methodology.

Chapter 3
Research Methodology

3.1 Introduction

The previous chapter reviewed some of the literature on web-based learning and the problems that were experienced by students in various institutions. This chapter provides an indication of how the data was collected and the research methods that were used for the study. The following aspects of the study are discussed in Chapter 3:

- Aim of the study
- Research Methodology
- Data Collection methods
- Data Collection Matrix.

3.2 Aim of the research

This study explores students' experiences of WebCT. The main focus is on the challenges and benefits experienced in using WebCT. The study attempts to answer the following critical questions with regard to students' experiences of WebCT:

- How do students benefit from WebCT?
- What are the challenges when students use WebCT?

3.3 Research methodology

The study is a qualitative study but quantitative measures have also been included during the analysis of the results. The purpose of the research is to explore students' experiences of using WebCT at the University of Pretoria. It is important to find out how students benefit from the web-based modules that are offered at the University.

The research is a case study focused on UP students who completed an Online WebCT Experience Survey. According to Hitchcock and Hughes (1995) in Cohen, Manion and Morrison (2000), case study approach focuses on individual or groups and seeks to

understand their perceptions of events. Hitchcock and Hughes (1995) also pointed out that case studies may be shaped by institutional arrangements.

The method of data collection was the WebCT Experience Survey that was administered by the Department of TLEI at the University of Pretoria in December 2004. The WebCT Experience Survey includes both qualitative and quantitative data from the survey's research. The focus for this research will be more on qualitative data, which includes the open-ended questions.

According to MacMillan and Schumacher (1997) qualitative research aims to investigate behaviour as it occurs naturally in situations and there is no manipulation of experiences. Dabbs (1982) is of the opinion that qualitative research seeks answers to questions by examining various social settings and the individuals who inhabit those settings. The researcher used the TLEI WebCT Experience Survey to collect data from the students.

The Department of TLEI administers a web-based survey to students at the University of Pretoria. At the end of each semester students are requested to complete an Online Experience Survey voluntarily. The survey was made available to students via the Students Online Services. This means that students had to login to Students Online Services and WebCT with their student numbers and password to access the survey.

Fresen (personal communication) designed the first draft of the questionnaire in 2001. The questionnaire was piloted in 2001 and 2002. It consists of open-ended and closed questions. There were thirty-three questions in total, thirty closed and three open-ended questions. The first thirty questions were based on a five-point scale format with the aim of determining the intensity of different items. The closed questions were focused more on quantitative items. For the purpose of this research the following open-ended questions were selected from WebCT Experience Survey:

- **Question 31**

  "What were the positive aspects you experienced during your web-supported courses? (Please answer in point form and limit your response to a maximum of 4 points.)"

- **Question 32**

  "What were the negative aspects you experienced during your web-supported courses? (Please answer in point form and limit your response to a maximum of 4 points.)"

Research conducted on web-based learning by UP concentrated more on the closed questions. This research concentrates on the open-ended questions where students state their challenges and benefits of using WebCT. The WebCT Experience Survey is conducted twice yearly and students are requested to complete the online survey voluntarily.

3.4 Data collection method

The WebCT Experience Survey was used to explore the students' experiences of WebCT. Krippendorff (1980) defines content analysis as "the use of replicable and valid method for making specific inferences from text to other states or properties of its source". Content analysis is divided into conceptual and rational analysis. The researcher used conceptual analysis approach to evaluate the open-ended questions in the survey, the text was coded into manageable content categories. The challenges and benefits were coded for their frequency and relevance. The researcher identified codes for the benefits and challenges of students using WebCT. Fifty-one codes were identified with six categories for benefits and sixty-five codes were identified with seven categories for challenges (see Addendum B and Addendum C). The categories for benefits and challenges of WebCT are discussed in Chapter 4.

For the purpose of this research the coding system was adapted from Miles and Huberman (1984). The codes that were generated from the data are related to WebCT experiences, which include the challenges and benefits. The researcher categorized the themes that were constructed. Conceptual analysis establishes the existence and frequency of concepts represented in phrases (Busch, De Maret, Flynn, Kellum, Meyers, Saunders, White and Palmquist, 2005).

Conceptual analysis was used to evaluate the open-ended questions in WebCT Experience Survey. Conceptual analysis is different from relational analysis as the former examines the relationships among concepts in a text. Table 3.1 explains the steps followed in conducting conceptual analysis.

Table 3.1 Steps in conducting conceptual analysis

Step	Description
1. Level of analysis	The researcher decides whether to code for single words or sets of words during the data analysis.
2. Number of codes	This is the step where the researcher must decide about the quantity of concepts to code. The relevant categories can be added

	at this stage.
3. Code for existence or frequency	When coding for existence the concept will be counted once and if counting for frequency, the number of times that the concept appears will be counted.
4. Distinguish concepts	This means that the researcher should decide if the concepts are coded as they appear or should they be interpreted to mean the same word.
5. Rules for coding text	The rules will help the researcher to have consistency and coherence in research.
6. Irrelevant information	The researcher must decide about the information that was not coded.
7. Coding of text	The text can be coded by hand or computer depending on the researcher's choice.
8. Analysis of data	During this stage the data that was coded and can be analysed to draw conclusions about the research topic.

**Adapted from Busch et al. (2005)*

According to Busch et al. (2005) conceptual analysis is important in analyzing data. The researcher identified fifty-one codes with six categories for benefits and sixty-five codes with seven categories for challenges. The text was coded by hand and analysed to draw conclusions.

According to Miles and Huberman (1994) codes are frequently abbreviations that enable the researcher to understand the issue being described. Both authors suggest that the coding label should bear sufficient resemblance of original data so that the researcher can understand.

3.5 Data collection

Three hundred and twenty-one students completed the WebCT Experience Survey. Three hundred and fourteen responses were submitted in English and seven responses were in Afrikaans. There were one hundred and twenty-eight responses for question 31 and one hundred and fourteen responses for question 32. The details of the target population are summarized in Table 3.2.

Table 3.2 Target population

Details	Description
Institution	University of Pretoria
Target population	Students from all faculties
Data collection method	WebCT Experience Survey Literature Review

The survey was open to all UP students from different faculties namely:

- Economic and Management Sciences
- Humanities
- Health sciences
- Engineering, Built Environment and Information Technology
- Natural and Agricultural Sciences
- Education
- Law
- Theology
- Veterinary Science.

The research was conducted at the University of Pretoria and all participants are registered UP students. All students undergraduate and postgraduate could access the survey provided that they have registered WebCT module.

The research instruments and the critical questions are listed in Table 3.3. There are two critical questions that were used for the purpose of this research. Reeves (1997) presented an evaluation matrix to explore data collection methods. In Table 3.3 the research instruments that Reeves (1997) refer to as the evaluation methods will be indicated with √ and the critical questions will be listed on the left column.

Table 3.3 Data collection methods

Critical questions	**Research Instruments**	
	Survey	**Literature Review**
1. How do students benefit from WebCT?	√	√
2. What are the challenges when students use WebCT?	√	√

The researcher used the WebCT Experience Survey as the research instrument to answer the critical questions. The literature review provided some guidelines and problems that are experienced at other institutions.

3.6 Summary

Chapter 3 discussed the research methods and data collection instruments that were used during the study. The WebCT Experience Survey provided more qualitative data of students' experiences about WebCT. Chapter 4 will discuss the data analysis in detail.

Chapter 4

Data Analysis

4.1 Introduction

This chapter presents the analysis and findings of data obtained by means of the WebCT Experience Survey. The data is presented and the process of data analysis is described.

4.2 Data Capturing

The purpose of the study was to determine students' experiences of using WebCT with regard to benefits and challenges. To collect data the researcher used the WebCT Experience Survey that was administered by the Department of TLEI in December 2004. All undergraduate and postgraduate students could access the survey provided that they had registered for the WebCT. According to Fresen (2005) 4 650 students completed the survey in 2003 and the response rate was 27%. The participation had decreased by December 2004 as only 314 students completed the survey.

The focus of the research is on qualitative data that includes the open-ended questions where students could share their experiences of learning with web-supported courses. The survey included positive and negative aspects of their experiences (see Addendum A). The following open-ended questions were selected for the research:

- **Question 31**

  "What were the positive aspects you experienced during your web-supported courses? (Please answer in point form and limit your response to a maximum of 4 points.)"

- **Question 32**

  "What were the negative aspects you experienced during your web-supported courses? (Please answer in point form and limit your response to a maximum of 4 points.)"

The focus of the open-ended questions is on qualitative data. Three hundred and twenty-one students completed the WebCT Experience Survey. Some of the students did not answer all the open-ended questions.

Three hundred and fourteen responses were submitted in English and seven responses were in Afrikaans. There were one hundred and twenty-eight responses for question thirty-one and one hundred and fourteen responses for question thirty-two.

I used content analysis to determine the presence of words or concepts within a text. Krippendorff (1980) defines content analysis as "the use of replicable and valid method for making specific inferences from text to other states or properties of its source". Content analysis is divided into conceptual and rational analysis. A conceptual analysis as part of a qualitative research methodology was implemented to investigate students' responses to the two open-ended questions. The textual inputs of the students were transferred to an MSWord ® document, recorded on paper, coded and analysed to determine students' experiences.

I used a coding method to analyse the WebCT Experience Survey. The written responses from the open-ended questions were read, coded and categorized according to benefits and challenges. Miles and Huberman (1984) describe codes as categories that are used in a sentence to classify words of transcribed field notes. They describe coding as a general approach to analyzing data. The different types of coding are listed in Table 4.1.

Table 4.1 Types of coding

Coding strategy	Description
Open	The researcher explores the data without developing assumptions and the categories of concepts are developed from the data available
Axial coding	Facilitates connections within categories. This kind of coding deepens the theoretical framework
Selective coding	Is reflected in the relationship between categories, which forms the theoretical structure of analysis
Factual coding	Focus more on concrete issues like definitions, events and conditions.

**Adapted from Kerlin (2002)*

I identified codes for the benefits and challenges of students using WebCT. Fifty-one codes were identified with six categories for benefits and sixty-five codes were identified with seven categories for challenges. The categories for benefits are listed in Table 4.2.

Table 4.2 Categories for benefits of using WebCT

Category	Code
Access	ac
Communication	com
User interface	usin
Computer skills	comsk
Convenience	conv
Downloads	dl

**Adapted from Miles and Huberman (1984)*

The left column refers to the categories identified while the column on the right gives the coding for the particular category. In both tables 4.2 and 4.9 the categories are on the left column while the codes are on the right column. It is important to read the categories first before you can understand the coding.

4.3 Survey findings on benefits of using WebCT

The survey findings with regard to benefits will be discussed below. The findings about benefits include:

- Access
- Convenience
- Communication
- User interface
- Computer Skills
- Downloads.

I identified these categories from the codes that were identified during the analysis of data (see Addendum B). The categories will be discussed and students' responses will be indicated for each of the benefits.

4.3.1 Findings related to access

For the purpose of this study I define access as logging onto the web at any time. To answer the question "How do students benefit from WebCT", the following responses were given as stated in Addendum A. The students identified access as the main benefit of using WebCT.

Most of the students stated that it was easy to access their modules on the web. Orange and Hobbs (2000) identified "time independent" as the advantage of web-based learning. Twenty-nine students gave responses that support the literature as indicated in Table 4.3. Below are some of the responses from WebCT Experience Survey.

Table 4.3 Responses related to access

Description	Response
Availability of information	*I can access anytime I need information on courses etc (R 79)*
Clarity of information	*I was able to clarify any issues that I had about the course at anytime that was convenient for me (R 29)*
Easy access	*Could access material at my convenience (R 57)*
Convenient time	*I can sit at home and access the work. I can do the work at a time that suits me best (R 80).*

4.3.2 Findings related to convenience

For the purpose of this study I define convenience in terms of the place where students access their modules. Some of the students identified convenience as the advantage of WebCT. The students indicated that WebCT was convenient and could be accessed anytime anywhere. One of the students indicated: *"Being able to do courses from home meant that I can be a stay-at-home mom while furthering my education" (R 48).*

Fourteen students indicated convenience as the benefit of WebCT. Another student that stated "*Anytime, anyplace is convenient especially for holiday assignments when res students cannot be on campus" (R 47)* supports the statement. The students also mentioned communication with the lecturer and fellow students as being highly informative and helpful.

The above statements are supported from the literature as Lau (2000) and Orange and Hobbs (2000) states that convenience is an important benefit for students in online learning because they can access their material anywhere provided they have access to the Internet. The responses that support this statement are listed in Table 4.4.

Table 4.4 Responses related to convenience

Description	Response
Ease	*It is often convenient for me to use it (R 13)*
Extended period	*Convenient online quizzes that were available for several days (R 55)*

Variety of material	*I can access anytime I need information on courses etc. class notes, slides and exam scopes can be downloaded (R 79*)
Speed of access	*Easy fast convenient (R 69).*

4.3.3 Findings related to communication

Mercadante (2002) mentions that teachers should incorporate technology in their teaching because it facilitates communication. There are seven students that experienced communication as an important aspect of WebCT. According to Lau (2000) communication allows for synchronous and asynchronous communication modes.

Through WebCT students could communicate using various communication tools in WebCT and that includes E-Mail, Chat room and the Discussion tools. These statements are supported by the responses listed in Table 4.5.

Table 4.5 Responses related to communication

Description	Response
Ease	*Easy way of communication (R 34)*
Interaction with people	*Objective inputs Interaction with people I never talked to before No inhibitions (R 113)*
Access to information	*Unified access to information, documentation and communication (R 123)*
Supporting information	*Communication with the lecturers Readily available notices The supporting information available (R 27).*

It is evident that the students benefited from the communication they experienced with fellow students and the lecturer. Through the communication tools students could communicate with each other using the various communication tools available in WebCT.

4.3.4 Findings related to user-interface

User interface was also identified as one of the categories. The interface should enable the users to navigate through the system and communicate the intended message. Eight students mentioned that it was easy to navigate through WebCT. Orange and Hobbs (2000) identified simple and familiar interface as one of the benefits of the web. The responses supported this statement as listed in Table 4.6.

Table 4.6 Responses related to user- interface

Description	Response
Easy interface	*Between web-supported courses and email I was quite comfortable (R 26)*
Structured courses	*Well structured easy to read and understand (R 33)*
User friendly	*It's user-friendly format (R 96)*
Easy way	*Light client, easy to load, user friendly GUI (R 97).*

Students are able to work independently if the user interface is easy. Problems might be experienced if students find it difficult to navigate through the program. No negative comments were made regarding difficulties about the navigation and interface. The responses made with regard to the hyperlinks are where the student stated that the number of clicks should be reduced but they did not state if that is causing problems.

4.3.5 Findings related to computer skills

The Centre for e-Learning Development Information Services (2003) mentioned increased IT skills as being the benefit of using WebCT. This statement was supported by three responses from the students. Students benefited from using WebCT because that had increased their computer skills. Sparnon (2004) stated that web-based courses give students the opportunity to improve their computer skills while learning the content.

Students learn to use the different tools in WebCT and that improves their skills. Students who access their modules regularly have the advantage of improved IT skills as compared to those who do not have WebCT modules as part of their curriculum. The responses that support the statement are listed in Table 4.7.

Table 4.7 Responses related to computer skills

Description	Response
New experience	*Getting new experience in life by using this services (R 75)*
Browsing	*Internet facilities (R 91)*
Computer skill	*The positive aspect is I have learned how to use a computer as I didn't know it before (R 120).*

Learning online provides students with various skills that are useful in their daily lives. Porter (1997) is of the opinion that students who are using educational technologies have the

advantage of working with a variety of interactive technologies. This will benefit students in their workplace because they can apply the skills learnt into practice.

4.3.6 Findings related to downloads

Students stated that it was convenient for them to be able to download the information that the lecturers uploaded in WebCT. There were six responses with regard to download. This was evident in the responses as listed in Table 4.8.

Table 4.8 Responses related to downloads

Description	Response
Convenient to download	*Can download notes without needing a textbook for class (R 3)*
Availability of notes	*Notes were always available even if I lost the previous print out (R 35)*
Feedback	*Being able to download notes. Being able to see marks through WebCT (R 49)*
Own convenience	*Great to be able to download notes when not being able to attend lecturers (R 77).*

The students mentioned, “download” as the benefit and challenge. The advantage was that they could download class notes without attending class and that was convenient for many students. The files uploaded in WebCT should be limited in size for students to download the files on their hard drives. The files should also be saved in a format that students will be able to download and read the material.

Figure 4.1 shows the benefits that were identified by students during the survey. Most of the students identified easy access as the benefit of using WebCT. This was made evident in their responses as seen in Addendum A.

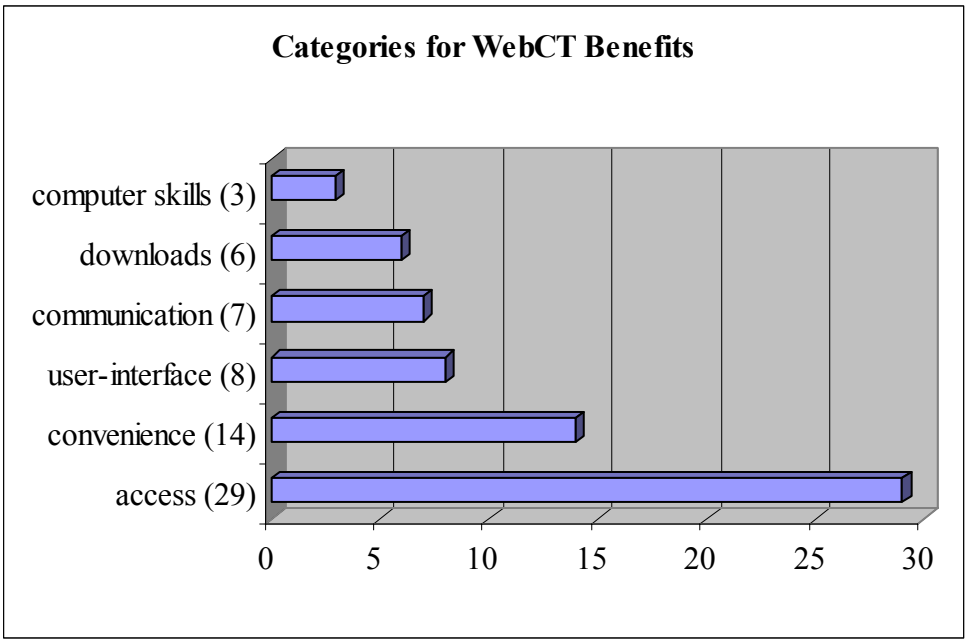


Figure 4.1 Results from the survey about benefits of using WebCT

The graph shows that most students considered access important. The students also regarded convenience of accessing WebCT at any time as being beneficial to them.

The students considered communication as being important in web-based learning. The user interface was considered to be an advantage as some students stated that it was easy to go through the system and that increased their computer skills. Few responses were given with regard to download.

4.4 Findings on challenges of using WebCT

The survey findings with regard to challenges will be discussed below. The findings about challenges include:

- Downloads
- Hyperlinks
- Feedback
- Information
- Technical
- Access
- Lecturer.

The categories will be discussed and students' responses will be indicated for each of the findings. Seven categories were identified for challenges as listed in Table 4.9. The categories will be explained in the section that follows.

Table 4.9 Categories for challenges of using WebCT

Category	Code
Downloads	dl
Hyperlinks	hl
Feedback	feb
Information	inf
Technical	tech
Access	ac
Lecturer	lec

**Adapted from Miles and Huberman (1984)*

To answer the research question "What are the challenges when students use WebCT?" the following challenges were identified. Full responses are contained in Addendum A for challenges of WebCT.

4.4.1 Findings related to downloads

Students identified slow connection, network downtime and server being down as the challenges that frustrated them. Students struggled to download some information because of the problems. Twenty-five students mentioned download problems regarding the system. There could be various reasons why students are unable to download information on the web. It could be because of the network system or the format that they used to save the documents.

Some of the problems that were identified in the literature review are also present in students' responses. Students identified download as the challenge in WebCT. The University of Wollongong (2004) also experienced some problems with regard to web-based learning. Students had problems downloading some files because of the slow connection and other technical problems.

Darkwa and Mazibuko (2000) mention inadequate communication infrastructure and connectivity in less developed countries as creating problems in a flexible learning environment.

Sparnon (2004) stated compatibility and network problems as being disadvantages in web-based learning. The above problems could contribute to students' inability to access their WebCT modules. These are some reasons that support the statements as seen in Table 4.10.

Table 4.10 Responses related to downloads

Description	Response
Slow response	*Slow response times – server down – lot of broken links (R 18)*
Large files	**Large volumes of course materials to download (R 52)**
Printing problems	*In some you cant print notes posted (R 48)*
Large files	*There are too many pages to download! WebCT off campus takes long to download. Assignments in PDF cause problems – don't print imiages and take longer than word (R 108).*

4.4.2 Findings related to information in WebCT

The students also mentioned that the information on the web was not always available as promised. The information and study material was not updated on time. Thirteen responses are related to information. The students also required information to be made available in two languages. This was evident in responses as listed in Table 4.11.

Table 4.11 Responses related to information

Description	Response
Insufficient information	*Cannot always find info I require regarding tests, assignments, etc (R 29)*
Availability of notes	**I did not get all of the notes (R 44)**
Availability of material	*Material was not available when lecturer said it would be (R 59).*

Rosenberg (2001) stated that the growth of information makes the need for learning important. It is important that people get access to information. Through web-based learning people can access information on their own. Rosenberg (2001) states that the advantage of using online information is that information can be easily updated. Information on the web is dynamic as it can be updated for students at any time.

4.4.3 Findings related to hyperlinks in WebCT

Hyperlinks were also identified as one of the problems with WebCT. The students stated that they would prefer a few links that could lead them to WebCT instead of many clicks. Nine responses were related to hyperlinks. They also stated that there were inactive links that are not working and updated. This was evident in the responses as listed in Table 4.12.

Table 4.12 Responses related to hyperlinks

Description	Response
Outdated information	*The pages are outdated and not frequently updated (R 105)*
Inactive links	*Limit the number of clicks before one gets to information wanted (R 56)*
Many clicks	*Other courses are not activated even now, the end of the year! Some links appear on the web-supported courses unclear (R 80)*
Inactive modules	*Information is not updated regularly – some pages took long to download (R 10).*

Rutgers (2005) identifies some problems with hyperlinks. The hyperlink could be problem depending on the computer setup. It is sometimes difficult to open some of the hyperlinked files because the destination folder has been moved. This will mean that students will not be able to access that file that has been hyperlinked (Rutgers, 2005).

With regard to WebCT students at UP stated that some of the links were inactive and that means the hyperlinks were not working. This could be the result of information not being updated. When using content module in WebCT, it is important that the designer of the module should always remember to update student view because the students will not see the updated information if the student view is not updated.

4.4.4 Findings related to technical problems about the system

The University of Wollongong (2004) reported on problems with printing files. Seven responses referred to technical problems. Students stated that they could not print files in Acrobat PDF. The problem could be because the students do not have access to Adobe Reader. The other reason could be that the students who access their WebCT modules at home do not have Adobe Reader to access PDF files.

The other problem that causes failure of technology was lack of convenient access to the equipment. Selinger and Pearson (1999) state access to Internet and server being down as problems in web-based learning. This statement was evident in the responses that were given by students. Students stated that they had problems accessing WebCT sometimes because the server was down. This was evident as listed in Table 4.13.

Table 4.13 Responses related to technical problems

Description	Response
Print option	*Lecturers forget to link a Print button to notes pasted on the Webct making printing out a nightmare (R 31)*
Maintenance of computers	*Computers frizzing (R 22)*
System problems	*Technical problems with the system (R 101)*
Insufficient computers	*Being unable to get to the computer (R 38)*
Staff	*Lack of technical support(R 51).*

4.4.5 Findings related to Feedback

Feedback was also identified as one of the categories. There were seven responses regarding feedback. According to Race (1998) feedback to learners is one of the characteristics of flexible learning. Mason (1994) believes that the use of communication media in flexible learning offers feedback. That means students in web-based learning required feedback from the lecturer on the regular basis. The students stated that they did not get feedback as was promised. This was supported by the responses as listed in Table 4.14.

Table 4.14 Responses related to feedback from the lecturer

Description	Response
Unavailable information	*Everything was not always available as the lecturer promised [sic] (R 3)*
Feedback not immediate	*Lecturers seldom replied to questions lecturers took a long time posting study material (R 54)*
Utilization of WebCT	*Lecturers slow to put information on webct Some do not utilize webct at all (R 55)*
Results unavailable	*My test results are hardly ever in the applicable place (R 60).*

Students' learning and progress needs to be assessed in a web-based learning and contact learning. With formative evaluation the instructor can identify the knowledge and skills that students have gained in the course. Hanna, Glowacki-Dudka and Conceicao Runlee (2000) believe that the instructor can easily identify areas that need to be improved. The other

evaluation they identified was summative evaluation that is done at the end of the course to determine if students have benefited from the course (Hannafin and Peck, 1988). During the summative evaluation students can be required to write a test and they will receive feedback after they have completed all the modules.

4.4.6 Findings related to lecturer's facilitation of WebCT

The lecturer and feedback categories are related because it is the lecturer who usually gives feedback to the students. Thirteen responses were stated concerning the lecturer. With regard to the lecturers the students stated that the lecturers seldom replied to their messages. Darkwa and Mazibuko (2000) emphasize staff training in flexible learning environment.
Experts in the specific field who have enough knowledge and experience about the system should offer the training. This means that lecturers should attend the priority courses offered by the Department of TLEI with regard to facilitation of web-based learning.

Lau (2000) stresses the importance of student training in using technology. The students' readiness differs because some are not willing to change the way they are accustomed to learning. The students who are less skilled with technology should have the opportunity to improve their computer skills. This means that both students and lecturers should have appropriate training in using WebCT. This was supported by the responses as listed in Table 4.15.

Table 4.15 Responses related to lecturer

Description	Response
Due dates	*Notification not given when items requiring action are posted. E.g. an assignment that must be completed by certain date (R 78)*
Utilization of WebCT	*Lecturers not using the web-supported facilities fully (R 53)* *Some lecturers use too many graphic images= very slow downloads not nearly enough lecture/'s use this fantatic facility (R 95)*
WebCT skills	*Some lecturers were not always sure how to use WebCT properly (R 32).*

Students also stated that some of the lecturers are not computer literate enough and that results in the course not being active. They would prefer their lecturers to utilize WebCT tools and respond to their messages regularly. The students also like to encourage their departments to put more courses on WebCT.

4.4.7 Findings related to access to computers

The technical problems identified above appear to be related to access and download problems. The technical problems they experienced were mostly with the system and the computer laboratory. Four respondents mentioned access problems. The students stated that they could not get technical help from the laboratory assistants and complained that some computers were not working well. This was evident in the responses as listed in Table 4.16.

Table 4.16 Responses related to access

Description	Response
No access	*Didn't have computer access all the time or when needed (R 41)*
Frustration	*Frustrating when not alble to access (R 30)*
Accessibility	*H drive not accessible – Server being down (R 15)*
System problems	*Quite a few times the server was down and other times technical help staff wasn/t really willing to help (R 85)*
Computers	*Didn't have computer access all the time- or when needed (R 41).*

Van den Brande (1993) believes that flexible learning enables students to learn when, how and what they want. This statement is contradictory with what students usually experience with access problems and that will influence the convenience in learning effectively on the web as students do sometimes experience access problems.

The students also need training with regard to using the tools especially the communication tools available in WebCT. In terms of technology they had stated that they could access WebCT anytime provided they have access to the Internet. They were not satisfied with the problems like "server being down". Students like to encourage lecturers and departments to make use of WebCT. The results about challenges can be seen in Figure 4.2.

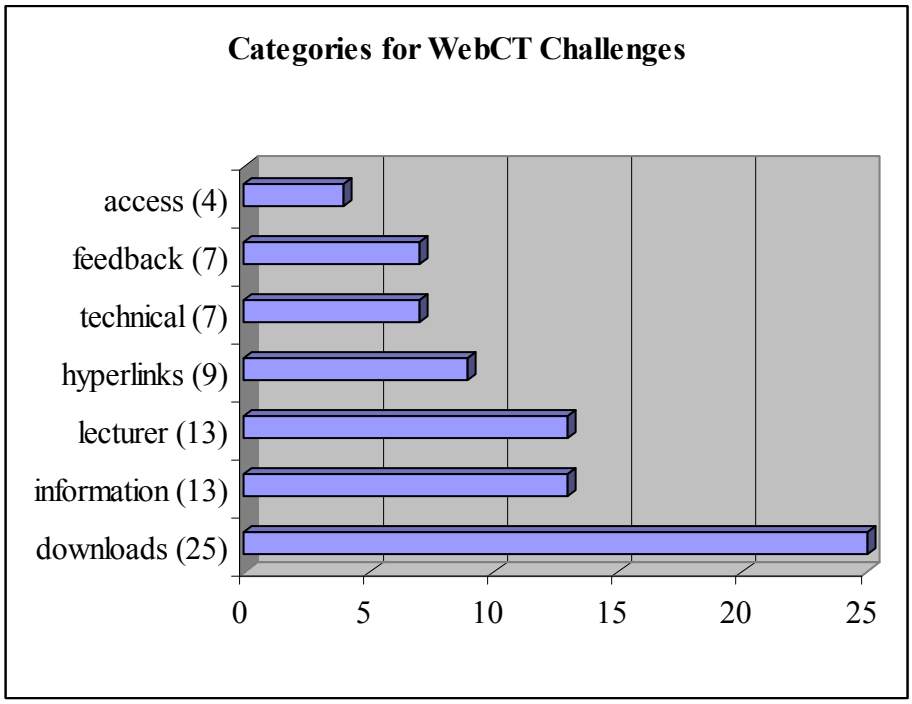


Figure 4.2 Results from the survey about challenges of using WebCT

The above categories are some of the challenges that students identified in WebCT Survey. The major problem that they experienced was with downloads. Students stated that they had large volumes of material to download. They also stated that they could not find the information as was promised.

This created unsatisfactory responses as students had to deal with hyperlinks that were inactive. They also stated that they would prefer fewer links before they could open the modules. With regard to technical problems, feedback and the lecturer, the challenges are on the same level. Access was also a challenge as some struggled to get information they required.

4.5 Summary

The analysis of data collected indicated the benefits and challenges that students experience using WebCT. Most of the students stated that WebCT was convenient to them because they could access their modules anywhere anytime provided that they have access to the Internet.

There were problems that students experienced with WebCT that include download problems, server being down, access to computers and WebCT modules. The next chapter will discuss the main findings of the research and limitations and recommendations will be presented.

Chapter 5
Conclusion and Recommendations

5.1 Introduction

In this chapter the main findings of the research, limitations and recommendations of the study will be summarized. The research aim was to explore the challenges and benefits of using WebCT by UP students. Table 5.1 summarises the results and the findings obtained from the WebCT Experience Survey.

The aim of this research was to explore students' experiences of WebCT. In order to address the research aim the researcher used the WebCT Experience Survey to explore the experiences of students with regard to WebCT. The data that was obtained from the survey was integrated with information as explored through literature study. The research findings are summarized in 5.2.

5.2 Summary of research findings

There are different aspects that were identified during data analysis and the research findings are stated below. The findings will be described and the recommendation for each of the findings is listed:

- **Downloads**

  Limit the size of files that should be downloaded. The students mentioned that the access was slow and it took long to download the files in WebCT.
- **Information**

  Some of the students were not satisfied with the information provided in WebCT. The other students mentioned that the information was not provided in time as they were promised.
- **Hyperlinks**

  The other problem experienced was about inactive/ many clicks. The students stated that some of the hyperlinks were not active. The number of clicks to WebCT should be limited.

- **Technical**

  Technical help should be available for students who experience problems with the system. Students are requested to contact IT Department if they experience technical problems and the Department of TLEI can be contacted for WebCT problems.

- **Feedback**

  Lecturers should give feedback on time concerning students' work. Students need to be motivated by the lecturer and feedback especially positive feedback contributes toward the motivation to learn.

- **Lecturer**

  The students and lecturers should be properly trained to use WebCT and its functionalities. The students believe that some lecturers do not utilize the functionalities of WebCT. Further support is needed for those students who are not computer literate while taking WebCT modules.

During analysis, the data was grouped into three categories relating to both the challenges and benefits that evolved through using WebCT. These findings included aspects such as technical, facilitation and content issues.

5.2.1 Technical issues

Access and downloads were regarded as technical issues. Hannafin and Peck (1988) identified program adequacy as one of the components that should be considered when evaluating software. Program adequacy is more related to the technical aspects, which refer to the extent to which a program is executed. The students stated that they have experienced some problems with regard to the system. For example the students stated the following problems regarding technical problems: slow connection, network downtime, server being down.

The Department of Telematic Learning and Education Innovation offers student training regarding Students Online Services and WebCT. The training can take place at anytime of the year if the need arises. The main purpose is to make sure that students have access to their WebCT modules and familiar with the functionalities and the different communication tools in WebCT (Quality Management System, TLEI).

Students who have technical problems are requested to contact the Department of Information Technology and the Department of TLEI handles students' problems with regard to WebCT modules. As Alessi and Trollip (2001) states that "institutions must provide maintenance for web servers and sites and frequently testing to ensure that everything works properly". It is the responsibility of the university's IT Department to ensure that a reliable fast connection to the Internet is maintained. Table 5.1 shows aspects that need attention.

Table 5.1 Aspects regarding technical problems

Aspect	Recommendation
Downloads	Limit the size of files Students should have access to Adobe Reader to be able to view PDF Lecturers should ensure that they provide the print option for students
Access	Department of IT should help students with access problems
Server	The server should be up and running at all times to ensure that students have access to their WebCT modules.

Some of the students mentioned access and download problems as the challenges of WebCT. The server was considered slow and this prevented some students to access their web-based modules.

5.2.2 Facilitation of learning

The use of WebCT in learning requires lecturers to facilitate the learning process. The lecturer should be able to facilitate the web-based module effectively. Salmon (2000) designed a model for online learning that could be adapted by lecturers for their WebCT modules.

Salmon (2000) identified five stages of e-learning. The stages of the model are access and motivation, online socialization, information exchange, knowledge construction and development. The stages are arranged in terms of technical requirements and e-moderating activities (Salmon, 2000). This model can be adopted and used by lecturers who have WebCT modules to conduct online discussions. Figure 5.1 shows the model.

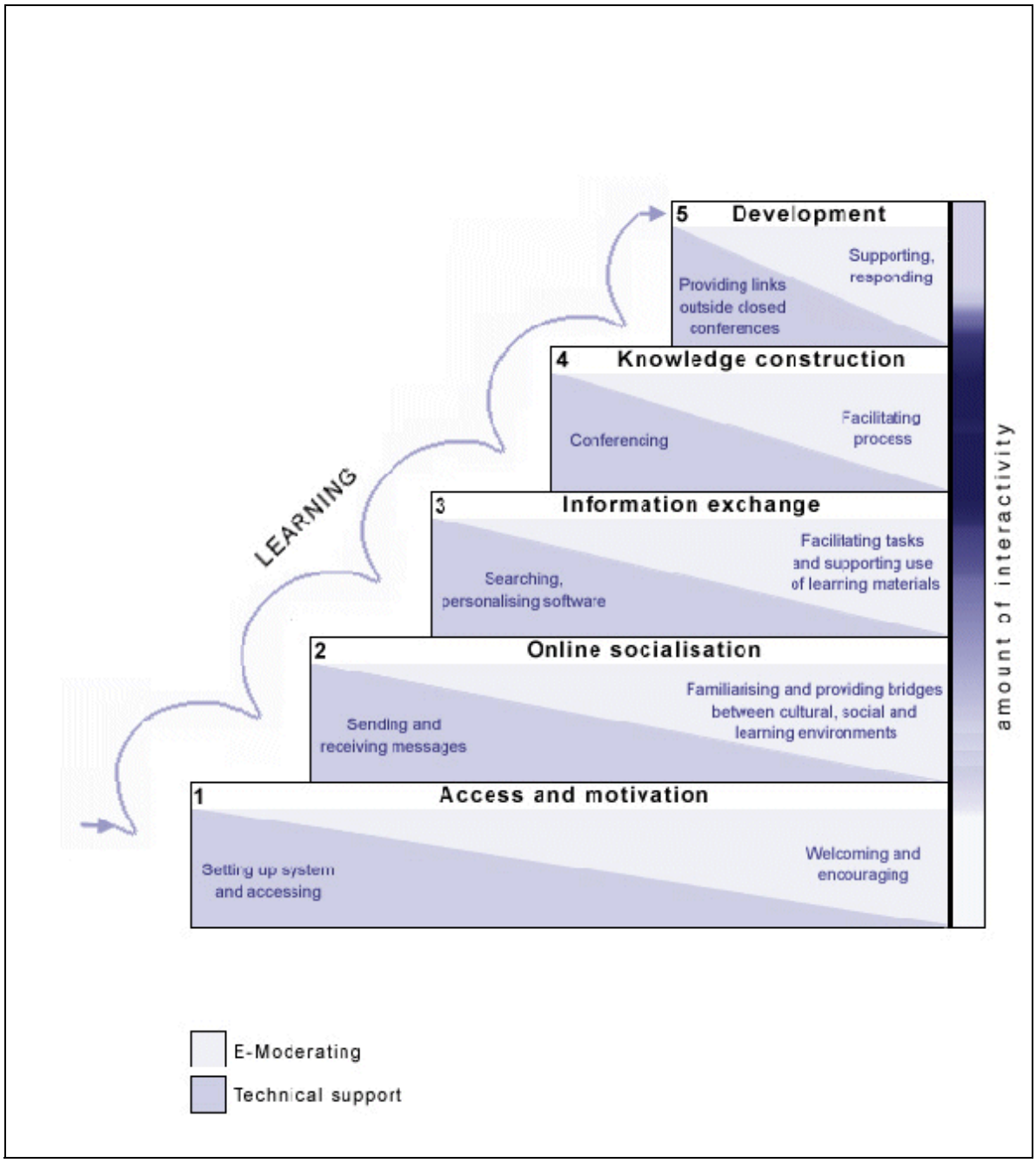


Figure 5.1 Five stages of e-Learning
**Adapted from The five stage model (2004)*

The five stages of e-learning are explained in Table 5.2.

Table 5.2 Salmon's stages of e-Learning

Stage	Description
Access and Motivation	During this stage the lecturer should make sure that all students have access to the WebCT module. A welcome message could be posted to encourage students to participate. The Department of TLEI offers WebCT Student Training to ensure that all students have access and are comfortable with the login procedures
Online socialization	This is the stage during which students start sending and receiving messages from each other. The students should have the opportunity to get to know each other and socialize online. The lecturer should encourage and motivate the students who lack behind because some students do not feel at ease when it is first time to communicate online
Information exchange	The lecturer should provide stimulating activities to the students. The students will start communicating and sharing ideas with each other
Knowledge construction	The students should be given the opportunity to construct their own knowledge based on what they have learnt. The lecturer should be able to facilitate and summarise the important ideas arising from the discussion messages
Development	During this stage the students take responsibility and can reflect on their own learning. The lecturer should support and respond to individual questions as students construct their own meaning.

**Adapted from Salmon (2000)*

It is important that the lecturers who use web-based learning to facilitate learning are familiar with the web environment. The lecturers should motivate their students to login to the modules by providing motivating problems. According to Malone (1981) intrinsically motivating factors encourage students to participate without external award. Malone (1981) identified qualities of intrinsic motivation as seen in Table 5.3.

Table 5.3 Motivation theory

Factor	Description
Challenge	The students should be challenged by the activities that the lecturer set for their modules. The task given should be appropriate to the target group
Curiosity	Students' curiosity is aroused when students receive information that conflicts their existing knowledge. This will encourage the students to learn more about the information which is conflicts their beliefs
Fantasy	Fantasy depends upon the skills required for the instruction. Students should be encouraged to fantasize about situations which are relevant to their learning
Control	Students should have control over what they are learning. The students should know the expected outcomes of the lesson to encourage them to know about the topic.

**Adapted from Malone (1981)*

Students should be motivated at all times when learning. It is considered important to challenge students with activities that will encourage them to learn and give them control over what they are learning.

5.2.3 Content issues

Information and feedback requires some attention from the lecturer. The students stated that information on the web was not up-to-date and they struggled with the hyperlinks. Some of the hyperlinks were not working and that frustrated the students. The links that leads to WebCT modules should also be reduced to avoid many clicks for the students. Table 5.4 states the findings.

Table 5.4 Aspects regarding content

Aspect	Recommendation
Information	Information should be up-to-date and in time
Feedback	Feedback should be provided when necessary to give students' progress
Lecturer	Receive adequate training regarding the use of WebCT and its functionalities.

The information on the web should be updated regularly and this will encourage students to access the information for their own convenience.

5.3 Limitations of the study

The following limitations of the research should be noted:

- The researcher should validate the results by using various data collection method
- Not all students could access the WebCT Experience Survey: those that do not have access to Internet could not access the survey
- The research only involved students from University of Pretoria
- The researcher will not claim generalisability but will rather contextualize the study
- The sample size was limited as only few students responded to the open-ended questions of the survey.

5.4 Recommendations

The following recommendations should be noted with regard to WebCT

- The academic staff offering WebCT modules should attend the WebCT Training courses offered by the Department of TLEI. The lecturers should attend the basic WebCT High Impact course that is a pre requisite for the other courses
- Help Desk should be available for students with technical and WebCT problems.
- There should be flexible hours for students to contact the responsible people when experiencing problems with WebCT
- The survey results for first and second semester should be available to UP students who are interested in feedback about the surveys. At present the results are made available to the Department of TLEI Management, Project leaders and lecturers who requests the student feedback surveys
- The WebCT Experience Survey should be open to students for extended period to ensure that most students complete the survey.

5.5 Summary

The study indicated that students benefited from WebCT. According to the results obtained from the survey the overall impression is that students who completed the survey did benefit from using WebCT. The students stated both the benefits and challenges of using WebCT. In terms of technology they had stated that they could access WebCT anytime provided they have access to the Internet. This was not always true as students experienced access problems with the system.

The students had problems with downloads. This was experienced as a challenge and benefit. The problem was that they struggled to download some of the information because of various reasons that are already stated in Chapter 4. They were not satisfied with the problems like server being down.

5.6 Areas of future research

This study has helped to identify some of the benefits and challenges of WebCT as experienced by the students. The students who completed the WebCT Experience Survey are positive about the use of WebCT and most of them would prefer it if all lectures used WebCT. It is also important that lecturers are empowered to use the Learning Management System in order to facilitate web-based learning.

Further research is needed about the future of web-based learning. Research is needed to investigate students' perceptions of WebCT and user satisfaction with web-based learning. Students' suggestions in WebCT Experience Survey should also be considered for future research.