

**The implementation of e-Learning in Public Further
Education and Training Institutions in South Africa**

by

RAMODISE PHILLIP TSOLO

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Study Leader: HB Klopper

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ABSTRACT

This dissertation concerns the evaluation of the utilisation of e-Learning in public Further Education and Training Colleges for the provision of education and training. The literature study investigates the concept e-Learning, related terminology, benefits and drawbacks and their relevance to the FET sector in South Africa. The study identifies basic e-Learning requirements, that is, infrastructure, technical and human resources for the implementation of e-Learning in FET Colleges. Government policy initiatives that seek to assist FET Colleges in the use of Information Communication Technology (ICT), challenges and opportunities for the provision of education and training that FET Colleges have in e-Learning are also investigated.

In order to realise the objectives of the study, separate structured pre-coded interviews with three senior managers representing the following Further Education and Training Colleges were held, Central Johannesburg, Ekurhuleni West and Sedibeng. The interviews covered issues relating to policy and availability of infrastructure and other resources for e-Learning. Self-administered questionnaires were also used to capture the views of middle managers on various e-Learning issues.

Findings indicate that e-Learning is a superficial matter for FET institutions – a little known phenomenon. The available ICT infrastructure in FET Colleges is mainly used for management and administration. Access to the Internet is mainly for managers and educators and very limited for learners. There are also conflicting views on e-Learning between senior management and middle managers due to miscommunication. There is a skills shortage as far as e-Learning is concerned.

DECLARATION

I declare that this dissertation is my own, unaided work. It is being submitted in partial fulfilment of the requirements for the degree of Magister in Business Administration at the University of Johannesburg. It has not been submitted for any degree or examination in any other University.

Signed at _____ on this day _____ 2006

Signature _____

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Thanks to my mother and late father who always took pride in me for my achievements since I was a little boy.

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ACCRONYMS

CBT:	Computer-Based Training
CD:	Compact Disc
CD-ROM:	Compact Disc – Read Only Memory
FET:	Further Education and Training
GET:	General Education and Training
HOD:	Head of Division
LCMS:	Learning Content Management System
LMS:	Learning Management System
NBI:	National Business Initiative
PDA:	Personal Digital Assistant
SETA:	Sector Education and Training Authority
SLA:	Service Level Agreement
SMS:	Short Message System
WBT:	Web-Based Training

CHAPTER ONE

GENERAL ORIENTATION TO THE STUDY

1.1 BACKGROUND

1.1.1 Further Education and Training institutions in South Africa

Further Education and Training (FET) institutions in South Africa are established in terms of The Further Education and Training Act 98 of 1998 and refer to all education and training equivalent to the last three years of secondary schooling (FET Act, 98 of 1998). Further Education and Training refers to and includes both public and private FET institutions. This study focus only on public FET Colleges thus excludes all public FET schools and private FET institutions

1.1.2 Public Further Education and Training Colleges

There are fifty Public FET Colleges in South Africa spread across the country's nine Provinces. The Colleges have multiple delivery sites known mostly as campuses or schools. The delivery sites are located at differing distances from each other. Most campuses within a particular college offer the same qualifications, a practise which presents challenges in terms of duplication, distance, time, consistency and quality of the delivery of learning content. These challenges may be overcome by the introduction of some elements of e-Learning and the introduction of Information Communication Technology. Chapter 2 and 3 of this report discusses how e-Learning works.

1.1.3 Public FET Colleges and e – Learning

The literature study conducted on e-Learning in public FET Colleges in South Africa shows that there is little if any previous study conducted on the use of e-Learning.

The research findings of this study show that e-Learning is a little known phenomenon in public FET Colleges in South Africa. The introduction of e-Learning in FET Colleges requires a total mind shift from College management and advocacy from the Department of Education. The basic technical requirements, infrastructure and human resource required for e-Learning are discussed in chapter 2 and 3.

1.2 INTRODUCTION

1.2.1 Utilisation of computers in education

The optimal utilisation of computer equipment in institutions of learning remains an argument among scholars and computer experts. Le Grange (2004:96) is of the opinion that the introduction of computers in education has not revolutionised education and that a great deal of computer equipment worth millions purchased by educational institutions remains unused and already obsolete. The opinion suggests that there are failures in the optimal utilisation of computer equipment for learning in institutions, which results in wasteful or fruitless expenditure. The Public Financial Management Act, No 1 of 1999 condemns such expenditures and warns managers of public institutions of misuse, misappropriation and waste of public funds.

1.2.2 Defining e-Learning

There are varying definitions of e-Learning and how to write it. Romiszowski (2004:5) mentions that there is no agreement on how to write it, be it *E-learning*, *e-Learning*, *e-learning* or *E-Learning*. For this study *e-Learning* is preferred and mostly used. King, Lee and Viehland (2004:359) and Broadbent (2002:213) define e-Learning as the delivery of educational content via electronic media, CD-ROMs, multimedia devices such as personal digital assistances (PDA's), including the Internet and intranets.

1.2.3 Information technology and e-Learning

The vast amount of data available through network technologies such as websites assumes that users of such networks are highly skilled and have no difficulties in accessing information. In contrary, Le Grange (2004:87) warns that it should not be assumed that the ability to retrieve information through network technologies implies that learning has occurred. To address the warning e-Learning is used to structure, organise and refine information that is relevant and can be used to provide learning needs. On the other hand Norris (in De Voutt and Chapin, 1981:7) argue that, technologists expect information technology to solve most of the problems encountered in education whereas educators see solutions as residing primarily in improved interactions among people in a learning environment.

The literature review in Chapter 4 revealed that basic technology for FET Colleges to embark on e-Learning is readily available in the market and support from the government. The literature review also shows that there is vast amount of information available about e-Learning that can be utilized by FET Colleges in order to improve teaching and learning. Garvin (2004:1162) mentions that continuous improvement programmes are sprouting up all over as organisations strive to better themselves and gain the edge through the utilisation of e-Learning as a medium for content delivery. However, there are more failed e-Learning programmes than successes. A question is raised -Why? For e-Learning to succeed, FET institutions need to commit to learning and adapt to be Learning Organisations. Continuous improvement requires commitment to learning. In the absence of learning, institutions and individuals simply repeat old practises.

In an attempt to provide guidance in the successful implementation of e-learning King et al (2004:361) discuss measures that can be employed to prevent e-Learning failures and further warn that e-Learning does not work for everyone.

Kruse (2005) [Online] and King et al (2004:360) highlight the benefits and drawbacks of e-Learning, which are discussed in Chapter 2.

1.3 THE RESEARCH PROBLEM

FET institutions are required by the FET Act to be responsive in the delivery of learning. As a result, an ideal FET College cannot afford to be just an exclusive site for the delivery of learning, grounded in a single location. It is the opinion of Unwin (2003) [Online] that an ideal FET College must be able to deliver training on clients' premises, in community centres, wherever and whenever best suits the learners or clients. Provision of education and training in FET institutions should ideally extend beyond formal courses to include, for example, assessment for workplace learning and training needs analysis.

FET Colleges have multiple delivery sites with dispersed learners who have enrolled for the same course. Learners from these delivery sites can be brought together in a virtual classroom using online learning as one form of e-Learning, to give one example. However, the research findings in Chapter 6 show that e-Learning is a little-known phenomenon in FET Colleges and that FET Colleges are playing an insignificant role and lag behind in the implementation and utilization of e-Learning as a mode of delivering teaching and learning.

This study is necessary because Further Education and Training Colleges are strategically positioned to deal with skills shortages in the workplace and to promote lifelong learning for adult learners. The use of e-Learning in FET Colleges can facilitate access to learning for employees and dispersed learners anytime, anywhere and thus promote lifelong learning.

It is the opinion of the researcher that FET Colleges do not conform to the definition of an ideal college as described above. e-Learning, because of its nature, can be a solution for FET Colleges to conform to be ideal Colleges.

1.4 RESEARCH QUESTION

Why is e-Learning not implemented and or utilised optimally in Public Further Education and Training Colleges in South Africa?

1.5 RESEARCH OBJECTIVES

1.5.1 Primary objective

The primary objective of this research is to investigate the implementation and utilisation of e-Learning in Public FET Colleges with a view of making the findings of the study available to FET College management as a guiding document for the implementation of e-Learning as a mode of learning delivery.

1.5.2 Secondary objectives

The secondary objectives of the research are listed as follows:

- To investigate how FET Colleges comprehend the concept – e-Learning.
- To investigate what resources required for the implementation of e-learning are available in FET Colleges.
- To assess the level of ICT utilisation for the delivery of education and training.
- To discover whether a platform is available to support the use of e-Learning.
- To assess whether FET Colleges are ready to can gradually blend conventional methods of teaching with e-learning (blended learning) over a period of time.
- To determine the level of competency on the use of ICT for learning in FET Colleges.
- To determine whether management support for e-Learning is available in FET Colleges.

- To investigate if there is any government support to FET College for e-Learning such as funding, policies, infrastructure, e.t.c.

1.6 RESEARCH METHODOLOGY

This study employs both qualitative and quantitative research methodologies. The two research methodologies are described in detail in chapter 5.

The qualitative research methodology used in this study incorporates the review of applicable literature, case studies, feasibility studies, conference papers and media releases relating to Further Education and Training and e-Learning.

The quantitative research methodology incorporates a data collection method and analysis using basic descriptive statistics. Two pre-coded questionnaires for data collection through survey and structured interviews were used and the processing of data was done through the assistance of the STATKON at the University of Johannesburg.

1.6.1 Case selection

In order to get a holistic picture of this study, the sampling method used was Judgement Sampling - focusing on those Colleges that are more likely to use e-Learning than others. Colleges in the Gauteng Province fitted the judgement very well. To reduce the sample to a manageable size, out of eight Colleges in the Gauteng province, three were further sampled considering the following factors; size, information richness and the likelihood of utilising e-Learning. The colleges sampled are, Central Johannesburg, Ekurhuleni West and Sedibeng College for Further Education and Training.

1.6.2 Data collection

The types of data that need to be collected and analysed to make good decisions about e-Learning are examined by Broadbent (2002:89 – 110) and discussed in chapter 3. The following data collection techniques were used.

1.6.3 Relevant Documentation

Documentation such as FET policies from the government, College Strategic Plans, College policies, media reports and available literature were used to determine the state of affairs as far as e-Learning is concerned in FET Colleges and also to support the theoretical background.

1.6.4 Questionnaires

Two pre-coded questionnaires were used for this study. Questionnaire A was used to interview “policy makers” and or senior managers. Questionnaire B was completed by middle “operational managers” commonly known as Heads of Divisions. The University of Johannesburg’s Statistics Department – STATKON – assisted in the design of the questionnaire.

1.6.5 Interview

Structured interviews were held with senior managers for the completion of Questionnaire A. Anon¹ (1997) explains that in a structured interview, the interviewer asks the same questions to numerous respondents in a precise manner, offering each individual the same set of possible responses.

1.7 DATA ANALYSIS

Collected data from questionnaires was analysed with the assistance of the statistics department of the University of Johannesburg – STATCON. Narrative and statistical analysis of the Questionnaires is provided in chapter 5

1.8 RESEARCH LIMITATIONS

Further Education and Training Colleges are spread nationally. The study only focused and was limited to Colleges in the Gauteng Province due to financial and time constraints. There is no statistical testing done in this study due to the size of the sample. However, the study probes further and more in-depth research.

1.8.1 Literature review limitations

Public Further Education and Training Colleges are fairly new in South Africa. There was very limited academic literature on e-Learning in public FET Colleges. Much of the literature used is sourced from studies conducted in the Higher Education band and other studies conducted outside South Africa. Generally, it is concluded that there is a limited body of research knowledge in the public FET Sector as far as e-Learning is concerned.

1.8.2 Empirical research limitation

The study was conducted during a period where management positions were being filled at various colleges. As a result there was movement to new positions of HODs and senior managers vertically and horizontal within and among Colleges. Responsibilities of some of the respondents had drastically changed. Further more the public FET College sector was busy with the recapitalisation process. It was very difficult to get responses from some Head of Divisions and senior managers.

1.9 PURPOSE OF THE STUDY

Van der Spuy and Wocke (2003:1) observes that technological advances supporting learning have and continue to occur rapidly, making it difficult for researchers and the literature to stay abreast of the changes and emergence of new terminology. The users of information communication technology such as FET Colleges are experiencing similar difficulties – cannot cope with the rapid advancement of technology. On the other hand Engelbrecht (2003:38) mentions that planning for the successful implementation of quality and sustainable e-Learning programme requires an understanding of the impact of Information Communication Technology on the education market and the current teaching and learning practises.

In view of the above, the purpose of the study is investigate the implementation and utilisation of e-Learning in Public Further Education and Training.

1.10 CHAPTER OUTLINE

Chapter Two discusses the literature study with specific reference to e-Learning. The chapter outlines common terminology and requirements for e-Learning, comparison with other forms of learning namely, Online Learning, Web-Based Training, and Computer-Based Training.

Other related topics that influence the implementation of e-Learning discussed include, Organisational culture, Change Management and Knowledge Management.

Chapter Three is a continuation of the literature study and discusses the basic requirements for the implementation of e-Learning – structural, technological, and human resource requirements.

Chapter Four outlines the challenges faced by Further Education and Training Colleges in South Africa as far as the use of ICT for the provision of education is concerned- including e-Learning. The chapter identifies relevant policies, acts and speeches made by political heads that seek to support the use of ICT for education – Nationally and Provincially.

In **Chapter Five** the research methodology is discussed with special reference to the rationale used for sampling, data collection method and how the data is analysed.

Chapter Six provides the research findings and interpretations. The results from the empirical research are reported on a question-by-question basis for the total sample.

Chapter Seven draws the conclusion and gives recommendations for future research.

CHAPTER TWO

e- LEARNING AND RELATED CONCEPTS

2.1 INTRODUCTION

Different researchers define e-Learning in different ways as indicated in 2.2.1. Some common concepts that come up in literature when e-Learning is defined include: Online Learning; Virtual Teaching; Web-Based Training; Computer-Based Training Synchronous and Asynchronous communication. At times terminology utilised to define e-Learning can be confusing and in most cases the terminology is used interchangeably or as synonyms. Broadbent (2002:18) recommends the importance to verify what is meant when different e-Learning terminologies are used. When the terms Online Learning, Distributed Learning, e-Learning, Virtual Classroom, Web-Based Instruction/training or Distance Learning are used, it is at times not certain what is meant. The advice is that a probing approach be followed to establish common meaning. This study use the terminologies interchangeably to avoid any confusion that may arise. The concept e-Learning is clearly defined later in this chapter.

A comparison of e-Learning and conventional learning methods is made to tell them apart. Managing a transition from conventional learning methods to e-Learning or blended learning can be a demanding exercise and require bold management decisions to be taken. Advantages, drawbacks and unique features of e-Learning are deliberated in order to assist managers in making decisions.

Knowledge management, Learning Management Systems, change management, organisational culture and related issues are discussed. These issues have an impact on the initiative to implement e-Learning in any organisation.

2.2 AN OVERVIEW OF e- LEARNING

According to Drewitt (2003:32) the training industry spent an inordinate amount of time in an attempt to define the 'e' in e-Learning, only to cry foul and back-pedal, taking refuge in the belief that *blended learning* will compensate if online learning fails to deliver the results. Blended learning refers to a mix or "blend" of instructor-led and online learning (Bielawski and Metcalf 2003: xvii).

Ramiszowski (2004:6) is of the opinion that presenting a structured manner of a working definition reveals a true richness of possible e-Learning systems and interventions. Although there is yet no consensus Piskurich (2003) mentions that everyone more or less agrees that e-Learning has something to do with technology, and has something to do with computers.

2.2.1 What is e-Learning all about?

Fradd (2003:116) mentions that e-Learning has its origins in Computer-Based Training (CBT) where training, typing on IT systems, was distributed on Compact Disks (CDs). In CBT, learners go through training in their own time, at their own pace. From CBT there was an improvement to intranet. An intranet is a private network with limited access (King et al, 2004:296). Students log onto a central location in order to go through the latest training material. Instructors are able to track a student's progress and give additional mentorship where required, unlike on CDs. Reports and proof of training can be produced.

King et al (2004:358) define e-Learning as the online delivery of information for purposes of education, training and knowledge management. e-Learning is a Web-enabled system that makes knowledge accessible to those who need it, when they need it, anytime and anywhere. Le Grange (2004:87) views e-Learning as learning that is facilitated on-line through network technologies, the 'e' representing electronic.

The Forum for Technology in Training, a United Kingdom based organisation in a report presented by Waller and Wilson (2005) define e-Learning as the *effective* learning process created by *combining digitally* delivered content with learning *support* and services. The report highlights the following keywords as important,

- **Effective:** Learning that succeeds, therefore e-learning has to be effective in order to meet the requirements of the definition.
- **Combining:** It is the combination of content, support and services that makes the difference not the individual parts, although each part is perfectly valid on its own.
- **Digitally delivered content:** Digitally delivered content excludes paper-based materials, which although a valid medium for learning, is not e-Learning. e-Learning refers to content delivered electronically by CDs, cell phones, the computer, and the Internet
- **Support:** A CD-ROM based programme can, theoretically, be done anywhere and anytime, but is often not supported by tutors.

According to Computer Desktop Encyclopaedia (2005) e-Learning is an all-encompassing term generally used to refer to computer-enhanced learning. The definition is often extended to include the use of mobile technologies such as PDAs (personal digital assistants) and MP3 players. It may also include the use of web-based teaching materials and hypermedia in general, multimedia CD-ROMs or web sites, discussion boards, collaborative software, e-mail, blogs, wikis, computer aided assessment, educational animation, simulations, games, learning management software, electronic voting systems and more, with possibly a combination of different methods being used.

Romiszowski (2004:6) captures e-Learning in a tabular form – **Table 2.1**.

The table illustrates a structured definition of e-Learning and provides some representative examples for better understanding.

E- Learning is often conducted via portals or Web Based Support sites such as WebCT and Blackboard to highlight only two.

Table 2:1 A structured definition of e-Learning

	INDIVIDUAL SELF-STUDY (A)	GROUP COLLABORATIVE (B)
ONLINE STUDY Synchronous Communication (1)	Surfing the Internet, accessing Websites to obtain information or learn. (Following up a WebQuest)	Chat rooms with or without video (Electronic whiteboards) Audio/Video conferencing
OFFLINE STUDY Asynchronous Communication (2)	Using a stand-alone courseware. Downloading material from the Internet for local study later	Communication by e-mail; Discussion lists or learning Management System (WebCT; Blackboard; etc)

Source: Adapted from Romiszowski (2004:6).

According to the table e-Learning may be an individual or a group activity. To conceptualise the dimension of the individual activity, a learner is considered as interacting with a distant source of information.

The question that then needs to be asked is whether that distant source is accessed during the actual learning (real time), or alternatively, has the source been accessed so as to be available at a learning location for study at any time (flexi-time) – through download, which is equivalent to borrowing a book.

Explaining the grid of **Table 2.1**, Romiszowski (2004:6) mentions that an e-Learning lesson could be composed of activities from several of the four quadrants in the table. The WebQuest methodology, **A-1** quadrant, usually initiates with an individual exercise, sparked by an assignment and some initial site visits, in which a learner surfs the web in search of relevant information to use at once. In **A-2** an individual accesses available learning material on a stand alone computer.

The learning material would have been prepared earlier, such as in Compact Discs. A small group may also participate in this methodology but it is ideal for individuals – making **B-1** quadrant also feasible. How so? The information gathered should be structured and commented on by the learner – thus transforming information into knowledge that should be shared by others. Knowledge sharing is implemented in an interactive group environment. The group environment includes everything that is in the **B-2** quadrant.

2.2.2 Common terms and phrases used in e-Learning

Synchronous and *asynchronous* are terms commonly used in e-Learning and feature in most e-Learning definitions, directly or indirectly.

2.2.2.1 Synchronous Communication Mode

Synchronous in the view of Keegan (2005:7) means, happening, existing, arising at precisely the same time or recurring, operating at exactly the same periods having the same period and phase. Morrison (2003:6) simplifies the concept – *synchronous* interaction by providing the following examples:

- In a telephonic conversation both parties are present and spontaneous during a conversation. Interaction is taking place with no significant time delays. Telephone conversations resemble synchronous interaction.
- A virtual class or peer-to-peer communication based on instant messaging technologies where a learner can interrupt an instructor or an instructor may ask the virtual class if everyone understands a concept.
- Keegan (2005:6) adds that synchronous interaction takes place when a lecturer or trainer is linked electronically with a virtual class of many students located in any part of the world. The class comes together, with the teacher, at a fixed time on a fixed day for a fixed duration and the trainer delivers the class live to the students wherever they are, using a variety of electronic media.

2.2.2.2 Asynchronous Communication Mode

Asynchronous means not happening, existing, or arising at precisely the same time. Carliner (2004:104) explains that asynchronous is an event in which people are not logged on at the same time.

Examples of Asynchronous interaction as given by Morrison (2003:6) are

- A book is normally written way in time before it can be read and it can be read anytime after it has been written. Reading a book does not happen as it is being written.
- In an E-mail communication interaction between sender and receiver can never happen in real-time.
- A self-paced e-Learning course, the instructor might publish a lecture on a website and learners would read it when their time schedules allow it.

2.2.3 Virtual teaching and online learning

According to Carliner (2004:19) virtual teaching takes place in a classroom like environment in which students and instructors are separated by geography, but do their work at the same time. The instructors and learners interact with one another by “chatting” online – typing messages that all people connected to the event can see. The instructors may lecture first, and then follow up by an online conversation. An Internet broadcast of the instructor and a simultaneous presentation of a related visual may be included. Virtual teaching is synonymous with distance learning. Teaching and learning takes place off-campus through online resources. Keegan (2005:8) adds that a class is brought together electronically and not physically. Carliner (2004:20) and Morrison (2003:6) share the view that virtual teaching is synchronous as the facilitator and learners are online at the same time. Thus many of the benefits of a conventional classroom are recreated electronically.

2.2.4 Web-Based Training/Instruction

According to Hall (2003: 305) Web Based Training (WBT) is a self-paced course accessible to everyone with a browser programme and Internet access, with all media needed to fulfil a learning objective. A browser interacts with given instructions on the web for the information to constitute training. Conrad and TrainingLinks (2000:10-13) are of the view that WBT is more than a collection of how-to Web pages or a direct translation of a paper-based workbook into Hyper Text Mark-up Language (HTML). Put differently Stanton (2006) mentions that simple conversion of printed, hard-copy textbooks or manuals into an electronic format does not mean that these offerings can now be classified as technology-based training materials. Web-Based training is the integration of instructional practices and Internet capabilities to direct a learner towards a specified level of proficiency in a specified competency.

Conrad and Training Links (2000: 11) examine a familiar delivery system – the traditional classroom. Often a classroom integrates varied teaching strategies, some occurring inside the classroom, and some taking place between meeting sessions: lecture, homework activities, small group work, student presentations, and so forth. **Table 2.2** illustrates types of WBT.

Table 2.2 Types of Web-Based Training

Non-Facilitated WBT (Asynchronous)	Mixed WBT Facilitation (asynchronous and Synchronous)	Facilitated WBT (Asynchronous and Synchronous)
<p>Occurs at a time defined by the learner.</p> <p>The training is designed to be completed without assistance or complex feedback.</p> <p>Typical WBT elements are text, graphics, streaming video, and multiple choice activities and assessments.</p> <p>Activities and assessments are evaluated via system-managed comparison to pre-programmed, correct answers.</p>	<p><i>Non-facilitated, asynchronous component:</i></p> <p>Students take a series of prerequisite WBT modules and are asked to test their knowledge by creating a report and emailing it to an instructor for evaluation.</p> <p><i>Facilitated, asynchronous components:</i></p> <p>Students email their work for evaluation. The instructor then e-mails feedback. The email includes a meeting time and Uniform Resource Locator (URL) for students to meet for an online class test.</p> <p><i>Facilitated, synchronous component:</i></p> <p>Students and instructor meet online at a specified time for class discussion to reflect on the previous assignment.</p>	<p>The training is primarily based on interaction between the instructor and course participants. This interaction can be synchronous or asynchronous.</p> <p>Facilitated WBT allows instructors to evaluate and respond to student performance; it can also support peer collaboration.</p> <p>Typical asynchronous, facilitating technologies include email, bulletin boards, and list serves.</p> <p>Typical synchronous, facilitating technologies include whiteboards, video conferencing, and chat.</p>

Source: Conrad and Training Links 2000

2.3 TYPES OF E-LEARNING

E-learning could be delivered in many forms. Broadbent (2002:11-17) discusses four types of e-Learning. Only three are discussed below as the fourth namely, Performance support tool, is just a wizard used to help learn software.

2.3.1 Informal learning

An informal learning takes place when a learner accesses a Web site and finds pertinent information. Conrad and Training Links (2000:10) affirm with Broadbent (2002:11) that this type of learning is not training because it does not include a formal instructional strategy consisting of a presentation of material, application exercise, and feedback. Informal learning can also be described as *pull learning* in the sense that learners seek the information they require and find it on the Web as and when it is required.

2.3.2 Self-paced learning

Self-paced learning is the process whereby learners access computer-based (CBT) or Web-based (WBT) training material in their own time and work at their own pace, normally on a CD-ROM for CBT or over a network or internet WBT. Learners select what they want to learn, decide when they will learn it, and set the pace they wish to follow.

2.3.3 Leader-led e-Learning

Galanit and de Nobrega (2004:63) classify this form of e-Learning as classroom-based or an instructor-led session. This form of learning is used to introduce and acclimatise learners to new learning processes, allowing the opportunity to discuss difficulties and remain motivated.

2.4 CONVENTIONAL LEARNING AND e-LEARNING

To illustrate e-Learning and also to tell it apart from conventional mode of training delivery, Table 2.3 as adapted from Wallhaus (2000:24) contrasts conventional approaches to the delivery of instructions with e-Learning. According to Broadbent (2002:11) and Wallhaus (2000:24) there are e-Learning hybrids created from combining conventional learning and e-Learning methods.

Table 2.3 Conventional learning versus e-Learning

Convectional Delivery	e-Learning
Students physically come to learning sites (campuses)	Students participate at locations remote from instructor
Students take classes predetermined by the institution	Student determines when to access instruction based on individual needs
Single college provides all instructional and services needed by the student	Educational services are unbundled, with different providers developing course materials, delivering instruction, evaluating students, awarding credentials, providing access to information, and offering various student services
Learning objectives are specified by the institution	Students shop for opportunities that fit their specific needs
Terms of the relationship with students are determined by the institution	Students design their own program with regard to content, length, structure, and so forth

Source: Wallhaus (2000:24)

2.5 BENEFITS OF E-LEARNING

According to Kruse (2005) there is vast movement towards e-Learning which is clearly motivated by the many benefits e-Learning offers. King et al (2004:360 - 2) adds that E-learning can be a great equalizer by eliminating barriers of time, distance, and socio-economic status; it can enable individuals to take charge of their own lifelong learning. Bielawski and Metcalf (2003:13) are of the view that much is made of the “anytime, anywhere” promise of e-Learning. However, the true power of e-learning is likely to be found in its potential to provide the right information to the right people at the right time and place.

2.5.1 Advantages of e-Learning to the Trainer or Institution

Some of the most outstanding e-Learning advantages as mentioned by Kruse (2005) [Online] and Weller (2002:56-58) to the trainer or institution are:

- **Reduced overall cost:** The elimination of costs associated with instructor's salaries, meeting room rentals, and student travel, lodging, and meals are directly quantifiable.
- **Learning time reduced:** According to Hall (1997:108) in Kruse (2005) [Online] and Morrison (2003: 350) e-Learning takes 40% to 60% less time than classroom equivalent to achieve the same learning.
- **Increased retention:** Kruse (2005) [Online] mentions that a study conducted revealed that knowledge application to the job averages an increase of 25% over traditional methods.
- **Consistent delivery:** Consistent delivery of content is possible with asynchronous, self-paced e-Learning.
- **Proof of completion and certification:** Essential elements of training such as certification can be automated.

2.5.2 Advantages to the Learner

Along with the increased retention, reduced learning time, and other benefits to students, particular advantages of e-learning to the learner Broadbent (2002:31-32), King et al (2004:359) and Kruse (2005) [Online] include:

- **On-demand availability** enables students to complete training conveniently at off-hours or from home. This advantage work well with part-time learners and also promotes life-long learning.
- **Self-pacing** for slow or quick learners reduces stress and increases satisfaction. Provides convenient access to learning anytime, any place
- **Interactivity** engages users, pushing them rather than pulling them through training. Learners are able to exchange information during online discussions.
- **Confidence** that refresher or quick reference materials are available reduces burden of responsibility or mastery.
- **Internet technical** skills and abilities are developed. Learners are encouraged to browse for information through hyperlinks to sites on the World Wide Web.

2.5.3 Disadvantages to the Trainer or Institution

e-Learning is not, however, the “be it all and end it all’ to every training need. It does have limitations, such as:

- **Up-front investment** required can be larger. According to Broadbent (2002:38), for an example, new computers may be needed.
- **Technology issues include** whether the existing technology infrastructure can accomplish training goals or additional expenditures for upgrade can be justified, to achieve compatibility of all software and hardware.

- ***Inappropriate content*** for e-Learning may exist. Phillips (2003:339) refers to content as product or course design. For an example, the acquisition of skills that involve complex physical/motor or emotional components (for example, juggling or mediation) cannot be augmented with e-Learning.
- ***Cultural acceptance*** is an issue in organizations where student demographics and psychographics may predispose them against using computers at all, let alone for e-Learning.

2.5.4 Disadvantages to the Learner

There are ways in which e-Learning may not excel over other training include:

- ***Technology issues*** may include learners who are technophobia and the unavailability of required technologies.
- ***Portability of training***. King et al (2004:358) mentions that e-Learning can not be extended to learners who are not computer literate. The issue of access and affordability of the necessary equipment and accessories becomes vital.
- ***Reduced social and cultural interaction***. The impersonality, suppression of communication mechanisms such as body language, and elimination of peer-to-peer learning that are part of this potential disadvantage are lessening with advances in communications technologies. Phillips (2003:338) sums it up as poor time management.

2.5.5 Do the Benefits Outweigh the Drawbacks?

According to Kruse (2005) [Online] the pro's and con's of e-Learning vary depending on program goals, target audience and organizational infrastructure and culture. But it is unarguable that e-learning is rapidly growing as a form of training delivery and most e-Learning users find that the clear benefits to e-Learning guarantee its role in the overall learning strategy.

However, King et al (2004:363) is of the view that e-learning detractors still argue that the magical classroom bond between teacher and student, and among the students themselves, cannot be replicated through communications technology. With a well-delivered synchronous distance education, and technology like message boards, chats, e-mail, and teleconferencing, the potential drawback is reduced.

2.5.5.1 Drawbacks and challenges of E-Learning.

Despite the numerous benefits, e-Learning does have some drawbacks. King et al (2004:363) warns against the following drawbacks:

- ***Need for instructor retraining:*** Instructors/lecturers/facilitators may not be competent in teaching using electronic means and may require additional training. Jolliffe, Ritter and Stevens (2001:278) warn against using instructors that are not competent in using the Web as a tool to deliver learning. Such instructors will not be able to support learners.
- ***Equipment need and support services:*** Additional funds are needed to purchase multi-media tools to provide support services for e-learning creation, use, and maintenance.
- ***Lack of face-to-face interaction and campus life:*** Many feel that the intellectual stimulation that takes place through instruction in a classroom with a “live” instructor cannot be fully replicated in e-Learning. Galanit and de Nobrega (2004:62) stress that users of e-Learning find motivation a major factor and at times courses are more often than not left unfinished and user’s confidence wanes.

- **Assessment:** In the environment of higher education, one criticism is that professors may not be able to adequately assess student work completed through e-Learning. There is no guarantee, for example, of who actually completed the assignments or exams.
- **Maintenance and updating:** The content development of e-Learning material as mentioned by Bersin (2004:84) is not a task but a process and can be difficult to maintain due to the lack of ownership and accountability for Web site material. There are practical difficulties (e.g., cost, time of instructors) in keeping e-Learning materials up-to-date.
- **Protection of intellectual property:** It is difficult to control the transmission of copyrighted works downloaded from an e-Learning platform. Jolliffe et al (2001:94-95) advise that an assumption be made that all the material available for Web-Based Training events have some form of copyright encumbrance attached to them. The implication is to set up a methodology of keeping track of the material used and their source.
- **Computer literacy:** E-learning cannot be extended to those students who are not computer literate. "Effective e-learning assumes that learners and lecturers/instructional designers are highly skilled persons" Le Grange (2004:90).
- **Student retention:** Without some human feedback, it may be difficult to keep some students mentally engaged and enthusiastic about e-learning over a long period of time. Bersin (2004:2) affirms that the role of a subject matter expert to teach and entertain in a classroom exists all the time. Instructors convey expert knowledge, experience and context.

2.6 MANAGING CHANGE

e-Learning is about change in the provision of education and training –especially for those institutions deploying it for the first time. The implementation of e-Learning represents significant change across an institution. Introduction and implementation of e-Learning need organisations to be familiar with change management processes. Stone and Koskinen (2002:151) are of the view that change management involves defining a systematic plan for making an organisation to readily accept change. Ellet and Naiman (2003:18) urge organisations wanting to introduce e-Learning to ask themselves the following questions:

- How good are we at introducing substantive change?
- If we are good at it, what are the success factors?
- If we do not have a good track record, how can we improve it?

An institution may consider having a resident change expert, who may be asked for help to assist in the major change of implementing e-Learning.

Change is imperative. In the opinion of Van Tonder (2003:47) organisations today are constantly engaged in continuous change. New products, systems and working practices are implemented at an ever-increasing rate. No matter the scale of the investment to bring about successful change, it is the ability of an organisation's people to operate effectively – before, during and after the change. The introduction of e-Learning has an effect in the way teaching and learning has been taking place. According to Ellet and Naiman (2003:18) for change to take place trainees must be able to learn how to learn in a different way.

Also, trainers must be able to learn how to train in a different way, master new types of information, new processes and procedures and new working relationships.

Institutions implement change management programmes to successfully move through the transition when going through structural changes, mergers or acquisitions. But when a new training programme is implemented, companies often do not guide users through the process (Van Tonder 2003:48). E-Learning embraces multiple facets of learning and it is important that institutions gradually introduce users to new programmes. There are focus areas educational institutions need to address to ensure the success of new training programmes such as e-Learning. The focus areas will include:

Marketing

Duggleby (2000:114) advises that e-Learning learners are not restricted to a locality where an institution is based. There is an opportunity to market nationally and internationally if the course is appropriate.

Training

Teaching new skills is critical in keeping trainers motivated and productive, and ideally, educators must be introduced to a learning mechanism that allows learners to study in a way best suited to their needs, whether that is facilitated by a mentor or self-paced. Bersin (2004:27) uses the term “alignment” to stress the importance of training. Trainers need to align their skills with the new way of teaching being e-Learning.

Return on investment

The success of a training programme is based on the ability to maximise the available resources. Factors to consider when determining ROI, are, general skill improvement, increase in productivity, achievement of forecast, etc.

2.6.1 Culture of the Organisation

Bredenkamp (2002:5) is of the opinion that organisational culture is one of the key ingredients in determining effectiveness and efficiency in understanding, benchmarking and in becoming a world-class business or organization.

For e-learning to have a chance for long-term success, institutions need to look at their current learning culture. In other words, can learners, trainers and management look at how training was done in the past – was it instructor led or self paced training? Based on this, institutions can address the process of how, in a new learning environment, instructors and learners will learn, and must define how an organisation will invite, instruct, assess, stimulate, certify and enhance the performance of learners through the new learning process –e-Learning.

Change management policies and processes need to be incorporated as part of a training and development strategy. As with all things in life, people do not like change and will need someone to guide them through the unknown by taking ownership of the marketing and change management process during implementation.

2.6.2 Managing the e-Learning change

A change process requires a change driver. According to Broadbent (2002:170) the e-Learning change-driver/champion should have the following skills to start and manage an e-Learning project successfully. A champion needs to have in-depth knowledge of the ideas he or she is advocating and an understanding of the biases of those who are resisting. Broadbent (2002:170) is of the opinion that e-Learning champions should know how to address management concerns and can deal with the effects of past e-Learning efforts that failed or other issues that may arise during the training needs analysis phase.

Sullivan (2006) [Online] warns against automatically assuming that everybody fears and resists change. People only resist the changes that threaten them or that make no sense.

Most people will eagerly adopt changes that make what they do easier, more rewarding, more enjoyable, or more secure.

Sullivan (2006) [Online] and Broadbent (2002:172) highlight the following actions to be taken to manage an e-Learning change:

- ***Deal with resistance.*** Unwilling, unable, or unknowing? Strategies need to be developed to deal with the causes of resistance.
- ***Communicate dearly, often, and decisively.*** Communicated predictable and dependable information regularly.
- ***Manage expectations.*** Do not let people to become overly optimistic at the beginning. This will reduce the likelihood that they will fall into despair when some target dates are missed.
- ***Foster teamwork and consensus among managers.*** People helping each other accomplish more than individuals. Establish expectations for teamwork, model appropriate behaviours, and reward teamwork. Set e-Learning objectives that all managers will agree upon in order to realise the benefits.
- ***Get managers on board first.*** Enlist the support of a high level executive who believe in the benefits of e-Learning. The other alternative is to offer senior management a pilot, test run course for them to realise the benefits.
- ***Show that e-Learning works.*** One of the advantages of e-learning is that, working in conjunction with learning management tools, it enables an institution to track participant progress and subsequent results, which will quickly and concretely reveal successes and failures.

- **Publicize the initiative** through memos, letters, e-mail, posters, and other similar vehicles. Stress the benefits of e-learning in any communications campaign.
- **Consider from whom people receive messages about e-learning**
Ideally the message should come from the immediate supervisor of each individual learner.

2.7 KNOWLEDGE MANAGEMENT AND E-LEARNING

According to Morrison (2003:7) e-Learning and Knowledge management do the same thing in different ways. E-Learning delivers *processed* knowledge by taking subject matter expertise, put it through an instructional design process and presents the result in an obvious framework, whereas Knowledge Management delivers *raw*, at the very least, less processed knowledge. From another perspective King et al (2004:365) mentions that Knowledge Management is frequently mentioned in discussions of e-learning. Knowledge management and e-Learning both use the same “coin of the realm” - knowledge. Whereas e-Learning uses the “coin” for the sake of the *individual* learning, knowledge management uses it to improve the functioning of an *organisation*. Knowledge management is described by King et al (2004:365) and Garrison and Anderson (2003:109) as the process of capturing or creating knowledge, organising it, storing it, updating it constantly, interpreting it, and using it whenever necessary within and across communities of common practice with similar interests and needs. Knowledge is managed using Learning Management Systems

2.7.1 Learning Management System (LMS)

According to Albertyn (2003:18) Learning Management Systems have evolved over the years to become full-scale software for training use in institutions.

At the heart of every e-Learning initiative is a sound Learning Management System. Cognitivity (2006) mentions that a Learning Management System (LMS) is an administrative backbone of e-Learning.

A Learning Management System as outlined by Bersin (2004:209) and Galanit and de Nobrega (2004) acts as a central repository for the registration, tracking, administration and implementation of business processes of learning. It is often implemented to manage the process, track results and provide a framework in which to deliver learning solutions.

Van Dam (2004:54-55) and Keery (2004:23) agree that a Learning Management System provides end-users with a single point of access, monitors all e-Learning activities and supply accurate and timely information to management for programme assessment and intervention to disparate learning object and components.

However, Amory (2005) [Online] indicates that most of the on-line learning systems available today emphasize content and student management, and provide rudimentary communication tools such as email, discussion fora and chat systems. Student management systems are not Learning Management Systems. Galanit and de Nobrega (2004:63) stress that a LMS needs to provide easily accessible ways to measure whether the investment has delivered tangible results and whether it has made a measurable impact on business processes in terms of quality, efficiency and productivity.

2.7.2 Functions of a Learning Management System

Typical functions and processes supported by a Learning Management System as highlighted by van Dam (2004:55) and Cognitivity (2006) [Online] include:

- Managing courses and course registration
- Tracking student registration, access, and progress
- Managing course information
- Course scheduling and administration including instructors and physical facilities
- Reporting

According to van Dam (2004:55), from a technical perspective, a LMS is software that links together and integrates all the other software components that make up a technical solution, integrating also with existing Enterprise Resource Planning (ERP) applications, such as financials and human resources. Because it integrates, Brockbank (2003:152) concludes that LMS is a server-based software system that controls e-Learning.

2.7.3 Choosing a Learning Management System

Van Dam (2004:55) stresses that a key factor in determining the right LMS for an institution is the portfolio of content platforms that must be supported by the technology architecture. The available infrastructure in an institution must be able to accommodate a Learning Management System while running other software programs. A key consideration in selecting an LMS provider as highlighted by van Dam (2004:56) is the organization's ability to deliver the LMS using an application service provider (ASP), which uses secure networks to provide LMS capabilities to small and mid-size firms.

Among the many e-learning companies to develop ASP offerings and host LMS and content are Generation 21 Learning Systems, Saba Software, Inc., and THINQ Learning Solutions, Inc. An ASP solution may provide a welcome alternative to organizations whose existing technology infrastructure and bandwidth cannot support the technical requirements of a more traditionally hosted LMS.

There are 200-plus estimated LMS in the market; buyers have many providers and options to choose from. Brockbank (2003:152) offers the following four guiding steps in considering a Learning Management System:

- Analyze the institution's current training and learning environment, commitment, technology, and resources
- Determine what needs must be met by the Learning Management System
- What IT training will need to be integrated into the Learning Management System
- What is the schedule of the deployment?

2.7.4 Learning Content Management Systems (LCMS)

The advent of the LCMS is much recent than that of the LMS, but is gaining significant attention from organizations attempting to build a common and centralized repository of learning content that can be shared and accessed by both the designers and learners. The primary objective of a learning management system according to Hall (2006) is to manage learners, keeping track of their progress and performance across all types of training activities. By contrast, a learning content management system manages content or learning objects that are served up to the right learner at the right time. A learning content management system is a multi-developer environment where developers can create, store, reuse, manage, and deliver learning content from a central object repository.

A well-designed blended learning or an e-Learning program requires organisations to explore the capabilities of a Learning Content Management Systems. Herselman and Hay (2005:396) define a Learning Content Management System as a system used to create, store, assemble and deliver personalised e-learning content in the form of learning objects.

However, a good LCMS needs an appropriate mix of authoring and content creation capabilities and support for a wide variety of content formats and also needs to provide authors with the ability to locate existing learning objects, create new learning objects, and assemble them into standards-compliant e-learning courseware. According to Downes (in Van Dam: 2004,55), an LCMS typically contains four essential features: an authoring application; a collection of learning objects (called a repository); a means of sending the completed course to a delivery system (called a delivery interface); and administration tools.

2.7.5 Learning Portals

A Learning Portal is explained by Paarmann (2003) as a website used to build and share knowledge. It is a "place" where information is posted, constantly processed, and is transformed into improved practices. A learning portal provides a coherent access point to a wide array of learning information and services. Typically, portals are used to organize information on a specific topic or area of interest, and may include significant variety in their content. In a nutshell a learning portal offers learners or organizations consolidated access to learning and training resources from multiple sources

2.7.5.1 Characteristics of a portal

A portal can sometimes be confused with an ordinary Web Site. Van Brakel (2003:05) highlights characteristics of a portal by indicating points to be considered before a Web site can be called a portal:

- **Single access point:** A single gateway or logon to identify approved users to access different content, for example the e-learning facility, or full text content, such as digital journals or other sources of information.
- **Internet tools:** These are site search and navigation tools to provide users with easy access to information. Examples are calendars and planners to allow users to input and share events.
- **User customization:** A typical portal prompts the first time user via a series of fill-in windows to provide information about him/her. When that user authenticates to the portal, this information will determine what he/she will see on the homepage immediately after login.
- **User personalisation:** A portal enables the end-user to take customisation one step further, namely to subscribe and unsubscribe to channels and alerts, set application parameters, create and edit profiles, add or remove links, and many more.

2.7.5.2 Choosing a learning portal

According to Paarmann (2003) a Learning Portal exists to help an institution to answer questions such as:

- “To what extent are we improving student, staff, and stakeholder learning?”
- “To what extent are we becoming smarter as an education system?”

In deciding on which learning portal to place content for e-learning, institutions need to investigate the characteristics and also determine to what extent are the above two questions answered. User groups have a great influence on the choice of a learning portal. Van Brakel (2003:7) identifies the following as possible user groups, prospective students, current students and academics to be considered when deciding on a learning portal:

- **Prospective students:** Can track applications for admission; scholarships; financial aid; attend virtual orientation; pay bills; all via a single interface.
- **Current students:** check progress (academic record); whether assignments have been graded; determine which computers are free in the nearest lab; library reminders; chat with friends; read announcements; see headlines or sports results on campus.
- **Academics:** Access class rolls with student photos; post class announcements; submit grades; check budget balances; track status of campus funds, e.g. for visits to conferences; search and access articles and other digital documents for research and class preparation purposes.

A study conducted (Herselman and Hay, 2005:400-401) identified WebCT, Electronic campus system (EC), Blackboard, e-College and Groupware as the five e-Learning systems most popular in South Africa. In comparing the systems the following key criteria were evident as listed in Table 2.4.

Table 2.4 Comparing WebCT, Electronic campus system, Blackboard, e-College and Groupware.

System	Features
WebCT	WebCT is web based and used to host course websites. It is suitable for guided and less dependent learning because of its tight structure and fully embedded tools. It includes bulletin boards, chat rooms, online quizzes, surveys, a grade book, a calendar and other tools. The bulletin board function allows the learning facilitator to create multiple bulletin boards called forums, which might focus on different parts of a course. The only thing needed to either administer or take a WebCT class is access to the web and web browsers such as Netscape or MS explorer.
EC	This system allows learners to access their marks as it is integrated with the ITS system in use where all important information can be accessed from a main database system. Learners can also download progress reports, course content slides, and studies guides and have access to valuable information about the institution. The main important is Internet access at all times. Marks and results from web-based test can also be downloaded if needed.
Blackboard	Blackboard is suitable for independent and collaborative learning because it supports loose, flexible content and focuses on group learning. It enables asynchronous communication via email, discussion boards and announcement facilities. Synchronous tools include a virtual classroom tool incorporating a shared whiteboard and a course information area. Blackboard has the ability to support materials in a range of file formats.
ECollege	Ecollege provides all the necessary technology and services in an integrated approach that is profitable for online programmes. Customers are supported and institutions are connected to generate high learner satisfaction, retention and enrolment growth. It is specifically suitable for distance education. It is the only provider that offers single point assurance that a programme will run and one-call accountability to meet any support needs.
Groupware	Groupware is the name given to a set of computer programmes that help individuals and groups to communicate and collaborate. All the software comes from Lotus and consists of components such as lotus notes, document managements system and workflow as well as database development. It is also available online for training of learners and staff

Source: Herselman and Hay (2005:4001)

Herselman and Hay (2005:4001) mention that all of the above systems are Internet-based and make use of online resources, online tutorials, online test and online discussions.

It is important to consider the findings mentioned above in choosing the correct e-Learning system and also to consider the college's needs and access to the Internet.

2.8 CONCLUSION

There are various ways in which e-Learning can be defined. The differing definitions and terminologies are mostly used interchangeably which may result in confusing the reader. The definition that captures all other definitions and provides an all-inclusive definition is when all known definitions are used in unison. E-Learning is not about total onslaught on purchasing sophisticated technology. The use of CDs and telephone are basic e-Learning methods that can be used.

Like any form of learning, e-Learning has some benefits, drawback and unique features, which were discussed. Focus on the benefits without overlooking the drawback can assist organisation to optimally utilise available technology.

Organisational culture plays a big role in determining the readiness of an organisation in initiating e-Learning. Change management principles need to be employed in managing an organisation through the e-Learning implementation stages.

In the following chapter (chapter 3) technical and operational requirements that facilitate the implementation e-Learning are discussed. Basic infrastructure and human resource for e-Learning are also highlighted.

CHAPTER 3

e-LEARNING IMPLEMENTATION REQUIREMENTS

3.1 INTRODUCTION

This chapter covers the operational requirements to make e-Learning work. An attempt is made to provide a guide on the tangible requirements when implementing e-Learning. A list of basic technical e-Learning requirements is given. The requirements include infrastructure, hardware and software. A human resource management structure needed to operationalise the implementation of e-learning is discussed and suggestions are provided. A list of “must ask” questions for the implementation of e-Learning about products and services is also provided.

3.2 ICT TOOLS FOR E-LEARNING

The utilization of Information and Communications Technology tools in education has seen tremendous growth in the recent past. Technology is now part of the teaching and learning process. Most if not all institutions of learning such as FET have Information Communication Technology tools that can be utilised to facilitate learning. Allias, Lewis, Moussouris, Pantland and Siluma (2004: 18 – 26) conducted a feasibility study on Computers in Union Education in South Africa and identified among others the following tools available within an e-Learning framework:

3.2.1 Telephone Tutoring

Telephone Tutoring takes place when there is a telephonic communication between a learner and a tutor over a learning subject matter.

This form of tutoring is easy to use, and does not require any complication training or investment in any specific software application platform. It is interactive and allows for immediate feedback.

3.2.2 Teleconferencing

In contrast to the one-on-one interaction of telephone tutoring, a teleconference involves a group of learners. Teleconferencing is relatively simple to use and does not require any specialised platform beyond telephone access. It is interactive, allowing for immediate feedback.

3.2.3 Compact Disc – Read Only Memory (CD-ROM)

CD-ROM is relatively simple to use and does not require access to the Internet if used on its own. CD-ROM can be used for the presentation of complex packages of learning material in a range of formats (including text, Internet, graphics, audio, and video) and can be used to present and facilitate structured engagement with pre-determined content. It also allows self-paced learner engagement with content.

3.2.4 Community Radio

Most Universities and communities have dedicated Radio stations, which may be used for learning. Community radio is easy to use and access.

3.2.5 Videoconferencing

Videoconferencing is like teleconferencing, but with a video component. It is relatively easy to use. It is more informal, and allows a greater degree of spontaneity than some of the tools discussed thus far. It is interactive, allowing for immediate feedback.

3.2.6 Short Message System (SMS)

SMS is a widely accessible mobile phone technology application, heavily utilised in South Africa, with many learners having mobile phones. SMS is relatively simple and cheap to use. There are applications that provide bulk SMS distribution to groups of users. SMS can be well suited for administrative interventions, such as assignment reminders or notifications of Internet updates and e-mail postings. SMS can also be used for simple quizzes or notifications of interesting and relevant radio and TV programmes.

3.2.7 E-Mail / Mailing Lists

Individual e-mail and messages and postings to mailing lists are relatively simple and cheap to use. They are relatively informal and interactive.

Because e-mail is asynchronous, it is suited to extended discussion environments and promotes thoughtful engagement with complex issues.

3.3 TECHNICAL INFRASTRUCTURE

Morrison (2003: 150-160) is of the view that the infrastructure required for e-Learning needs to be thought in line with the platform being built. The e-Learning application may not be the only one running on the available organisation infrastructure. Some other applications, like e-mail, are mission critical. As a result, e-Learning applications will fight for a share of scarce infrastructure resources. According to Stone and Koskinen (2002:29) institutions need to conduct analysis of the available technological resources, constraints and requirements in order to develop an e-Learning strategic plan. The starting point is to look at available bandwidth.

Jolliffe et al (2001:293) and Broadbent (2002:94) agree that sufficient bandwidth for transferring data is the most important resource when considering e-Learning. Bandwidth is the amount of data that can flow through a network at any given time, and as such have a direct implication at the speed at which content will be delivered in an e-Learning environment.

3.3.1 Technology Analysis

Technical analysis can be a detailed and complex process and warrants separate consideration. However, Broadbent (2002:94-95) and Stone and Koskinen (2002:33) offer the following questions to assist in making primary decisions:

- What is the prospective learners' end user computer literacy level?
- What does the IT department know about e-Learning?
- How do users connect to the institutions network and what is the network capacity (bandwidth)?
- What are the current and required standard platforms (server platforms)?
- How do users connect to the Web?
- What plug-ins is allowed and what plug-ins are required?
- What are the current and required media software and hardware?
- What security issues associated with e-Learning? Will the training go through a firewall?
- What plans does the institution have for expanding technology in one to three years?
- What is the required infrastructure maintenance program?

The above questions can be used as a guide in determining the type of e-Learning that an institution can choose using the available technology.

3.3.2 Infrastructure Upgrade/Outsourcing

“If the organisation does not have the capacity or the technology to accommodate e-Learning is there an openness to go outside to an Application Service Provider?” asks Broadbent (2002:95). A strong business case is required to provide answers and clearly indicate whether existing infrastructure, an upgrade of the infrastructure or outsourcing of infrastructure will be required for e-Learning. Morrison (2003:150) advises that if an institution’s infrastructure is not able to support e-Learning or a proposed design for an e-Learning application, in principle, upgrading or outsourcing the infrastructure will be an option.

Outsourcing elements of e-Learning can provide a solution to a number of infrastructure issues, for an example, the IT department may not be in a position to install and support an e-Learning application; or as Morrison (2003:151) mentions, a Learning Management System or virtual classroom application might meet all needs but there could be a conflict of support infrastructure within an organisation. Piper (2002:132) strongly recommends involvement of an IT organisation/person in the early discussions of possible outsourcing. Stone and Koskinen (2002:33) add that the costly, complex, and time consuming effort associated with the installation of new servers and software to support a Learning Management System and all e-Learning courses may lead to considering the use of third party learning portals, such as click2learn.com, to give an example. For an example, Stone and Koskinen (2002:33) mention that there are pay as you go costs on a per learner basis. It is advised that an institution must consider all available options, whether to outsource or upgrade, in order to choose the best option.

3.3.3 Hardware

Hall (1997:57) mentions that the computer on which training programme files reside must be configured for use on the Internet or the institution's intranet. Hall (1997:57-77) and Lampner (2005) [Online] are of the opinion that a high-powered computer is not necessary to get access to the Internet, but it is a good idea to get a powerful machine for authoring training programmes.

3.3.3.1 Operating System

Lampner (2005) [Online] director of e-Learning recommends Microsoft Windows 95/98 operating systems as a basic requirement for e-Learning. Microsoft Operating Systems are mostly used and widely available in South Africa.

3.3.3.2 Central Processing Unit (CPU)

Stark State College of Technology (2006) [Online] recommends to learners enrolling for an e-Learning course that a Personal Computer (PC) with a minimum of Pentium I or higher processor is a requirement. For sophisticated graphics and multimedia programs, the Pentium chip is the fastest and gives value for money.

3.3.3.3 Memory

For running a training program over the Internet, Hall (1997:58) is of the opinion that 32 MB can be used as a minimum. Some programmes may be run directly on the Internet.

3.3.3.4 Internet connection

Internet connection is a prerequisite for most e-Learning program. However, Stark College (2006) as an illustration does not provide an Internet Service Provider (ISP) account for students enrolled on their e-Learning programs. Learners are advised to have Web access through their own ISP prior to the start of classes.

Some institutions, like the University of Johannesburg do provide learners with login names for accessing the institution's portal. There are various ways of connecting to the Internet that can be explored. The following are some options as provided by Jolliffe et al (2001:294-296):

ADSL

ADSL (Asymmetric Digital Subscriber Line) is a technology that operates over a normal voice telephone line wiring. ADSL data rates operate from 1 to 6 Mbps on the downlink channel and between 16 Kbps and 640 Kbps on the up-link channel.

ISDN

ISDN (Integrated Services Digital Networks) is a dial-up digital circuit. ISDN data rates can go as high as 256 Kbps.

BROADBAND

Broadband implies any speed above what is commonly used at the time. In technical terms, broadband is transmission over a network in which more than one signal is carried at a time. Broadband technology can transmit data, audio, and video all at once over long distances.

DIAL UP

Dial-up is Internet access using standard telephone line and modem.

3.3.3.5 A video Accelerator Adapter card requirement

For running an Online training program, the main requirement is simply that a computer access Web site and run the program. If the training program does not have sound then a sound card is not necessary. If the training program does not have video then a special video card to run it, is not necessary.

3.3.4 Software

The software required for accessing a Web-based training program is known as a Web browser. According to Hall (1997:59) a Web browser can run on any platform but must be connected to the Internet or an intranet. In case Web technologies used in the course are for animations, audio, or video files, those technologies must be incorporated into the Web browser software. The software required for putting together a Web-Based Training program is known as an authoring tool.

3.3.4.1 Authoring Tools

Kaplan-Leiserson (2006)[Online defines an authoring tool as a software application or program used by trainers and instructional designers to create e-learning courseware. Types of authoring tools include instructionally focused authoring tools, Web authoring and programming tools, template-focused authoring tools, knowledge capture systems, and text and file creation tools. Authors (those who use authoring tools) can produce attractive and useful graphics applications. Most authoring systems also support a scripting language for more sophisticated applications. “The distinction between authoring tools and programming tools is not clear-cut. Typically, though, authoring tools require less technical knowledge to master and are used exclusively for applications that present a mixture of textual, graphical, and audio data”

(http://www.webopedia.com/TERM/A/authoring_tool.html).

3.3.4.2 Networking

The type of networking needed for running Web-based Training programmes varies according to how a programme is accessed. If a programme is accessed over the Internet, then a student needs an Internet connection. If a programme is accessed over an intranet, a student needs an intranet connection.

3.4 E-LEARNING HUMAN RESOURCE REQUIREMENTS

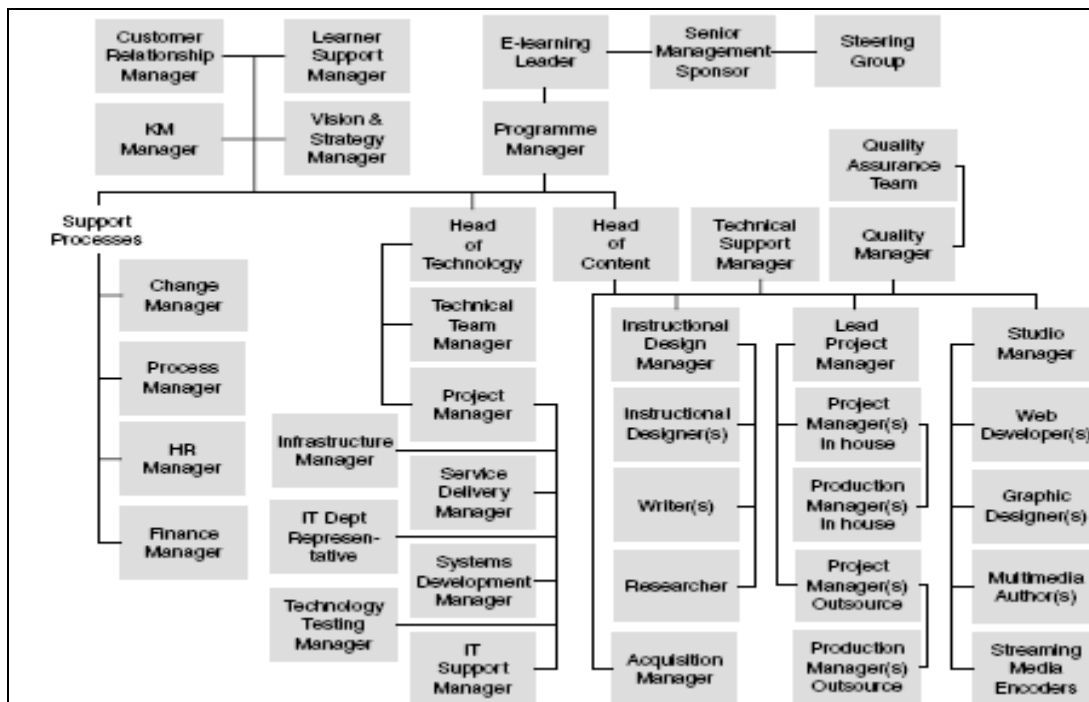
Ivancevich, Duening and Konopaske (2002) elaborate that an e-learning team comprises of people with technical expertise, subject matter knowledge, and interpersonal skills willing to learn. More important, an e-Learning team needs strong leadership that can bond a group of diverse talent. In addition to project managers, an e-Learning team includes instructional designers, graphic artists, videographers, animators, writers, programmers, quality controllers, and subject matter experts. Each team member has a specific set of tasks and duties to perform.

Engelbrecht (2003:38) is of the opinion that in the strategic planning process to implement e-Learning or adjust existing e-Learning initiatives; the focus should not be primarily on how ICT can be used to achieve business goals, but also on the human aspects of teaching and learning. To emphasise the importance of human resources, Morrison (2003:137) is of the opinion that two teams are needed for the success of an e-Learning initiative. The first team, being the building team responsible for building an e-Learning application and platform and the second team, the delivery team being responsible for the continuous delivery of e-Learning once the applications is in operation. The two roles of the two teams are briefly discussed.

3.4.1 e-Learning Building Team

Morrison (2003:139) provides an overview of an e-Learning build team in figure 3.1. The e-Learning building team comprised of managers/individuals in various areas. The responsibilities of each manager are discussed below

Figure 3.1: e-Learning build team overview



Source: Morrison (2003: 139)

- **The e-Learning leader or manager** owns the responsibility for managing the initiative and have hands on management and leadership skills. Ivancevich et al (2002) adds that an e-Learning leader must have project management skills. Budget and resource allocation decisions and scheduling are duties of the project manager.
- **The vision and strategy manager** sets a vision and strategy that is revolutionary enough to test the implementers but which does not frighten the entire institution or enterprise. Most e-Learning failures are attributed to technology failures.

Morrison (2003:140) mentions that 37% of senior managers identify “technical difficulties” as a barrier to successful implementation of e-Learning. Various managers are required to manage technology namely:

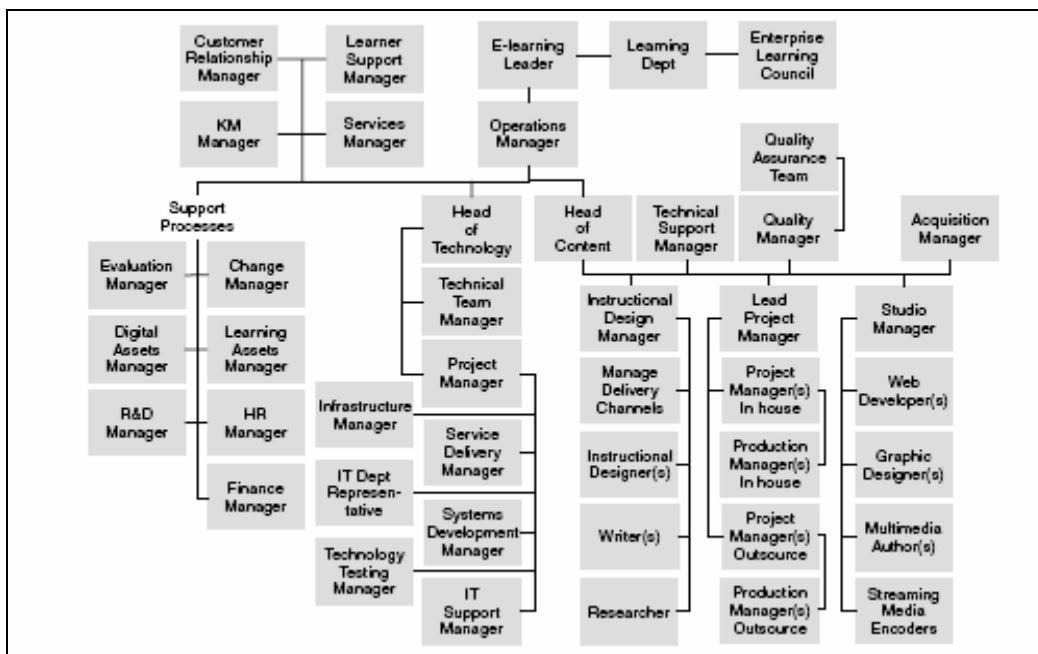
- **Infrastructure Manager** Infrastructure is so multi-faceted an issue and so important to the successful delivery of e-Learning. The person filling the role of Infrastructure Manager should have previous experience of enterprise infrastructures.
- **Systems Development Manager**: To build a unified application from the offerings of external vendors and internal resources, all vendors’ technologies need to work in harmony. Facilitating this close collaboration is the responsibility of the Systems Development Manger who should have previous experience of managing systems development at enterprise level.
- **Testing Manager**: Technology testing occurs at platform, application, and course and unit levels. The testing manager owns the responsibility for the strategies, resource, scheduling, collaboration and reporting associated with all levels of testing.
- **Technology Project Manager**: The technology project manager owns the responsibility for managing the interdependencies of streams of activities in an e-Learning project, for ensuring that milestones are met- and consequences mitigated when they are not and for ensuring that the technology team is aware of and supports the dependencies of other teams.
- **Technology Team Manager**: Depending on the scale of the e-learning initiative and the number of vendors involved, there can be a need for a technology team manger with administrative responsibility for day-to-day operations.
- **IT Support Manager**: The e-learning team tends to use systems and applications not found elsewhere in the enterprise. Content development tools are one example.

The content development team also tends to run a number of development servers that have non-standard configurations. Central IT support might be unable or unwilling to support this software and hardware in this circumstance; it falls to the IT team to provide technical support to the whole e-Learning team. The manager with this responsibility should have the skills to support the e-Learning team's desktop applications and administer its services.

3.4.2 e-Learning Delivery Team

Morrison (2003:146) presents a diagrammatic overview of the e-learning delivery team in **figure 3.2**

Figure 3.2: e-Learning delivery team overview



Source: Morrison (2003:146)

Morrison (2003:146- 149) outlines key roles the e-Learning delivery team need to play. Broadbent (2002: 73-78) and Fradd (2003:117) agree that a project management approach be followed in the implementation or delivery of e-Learning. The Project management team managing the implementation should have the following skills among others:

- **Strong communication skills** - be able to communicate the stakeholder's vision to the technical team, to translate business vision into realistic systems tools. To understand (listen to) the client's need and realistically meet these expectations.
- **Multi-tasking** – be able to work on multi-faceted projects and co-ordinate several activities simultaneously.
- **Team management** – being able to work with very different team members, motivating them and resolving any conflicts.
- **Leadership skills** – leading the project team and setting a good example within the client's work environment.
- **Resilience** – managing complex tasks under difficult circumstances.
- **Decision-making skills** – often a project manager is “caught” between the team and the client's expectations and has to make decisions about what is best for the project.
- **Evaluation and feedback** – making sure that the project deliverables are met in time and that any valuable lessons learned are fed back into the project management methodology.
- **Financial management** – part of control, the manager has to keep an eye on costs and has to keep in line with the accounting practices of the vendor/service provider as well as the client.
- **Flexibility** – the project manager has to maintain control of the project, yet practise flexibility as the project grows and the client gains an understanding of the impact of e-Learning. The project manager must be able to see the change and act accordingly.

- **Negotiation skills** – these are important when trying to reissue, recognising and raising the awareness of risk.

3.5 E-LEARNING PRODUCT EVALUATION

In order to provide a guide on the implementation phase of e-Learning some key questions need to be asked and answered accordingly. The type of questions asked are meant to sensitise prospective e-Learning users about what lies ahead on the e-Learning road. The e-Learning road will always be under construction and the market will always evolve.

Morgan (2001:203) asks thirteen questions that need to be asked in assessing the strengths, weaknesses and applicability of different e-Learning offerings. Properly answered, the 13 questions provide a solid basis for evaluating online learning and education products. Most importantly, the questions may also help shape an individuals thinking in a way that will help position an institution's approach to e-Learning with an eye on the future instead of the past. Ten of the questions that are more applicable to the FET College set up are discussed below.

3.5.1 Ten questions to ask

Before embarking on e-Learning Morgan (2001:207) recommends thirteen key questions that need to be asked about e-learning products and services. The study highlights ten of the thirteen questions.

a) What services does the e-learning supplier or application actually provide?

In understanding the e-Learning marketplace it is useful to distinguish between four main categories of supplies:

- *Portal services*: Portal services act as channels between content creators and end users. See chapter 2 for more details on portals
- *Content providers*: Typically content providers fall into two categories: “High-priced” course providers who bring top quality management courses online for relatively high prices – usually set on a per user basis and equivalent to attendance at a top management program. An example is the e-Degree “Lower-priced” course providers that typically offer a much larger range of courses aimed at employees engaged in different functional roles.
- *Customization companies*: Customized companies offer to put company specific training and education online for a custom price. Customers typically provide the content, or the customization company purchases third-party content to meet the customer’s learning specific learning needs
- *Specialist technology and service companies*: In the e-Learning marketplace there are dozens of companies offering special services such as online interaction, chat rooms, computer simulations, and electronic competency assessment and training evaluation tools. These are usually freestanding products and services that can be plugged into the “front”; “middle” or “back” ends of corporate online training programs. For example, competency assessment and evaluation services can be purchased to assess and measure learning needs at the “front end” and the success of training outcomes at the “back end”.

b) What type of instructional content is being supplied?

In choosing a content supplier it is important to consider the breadth and quality of the instructional materials provided. Many companies have excellent courses in technical skills training, especially in the computer field – for example, “How to Use Microsoft PowerPoint.” However, high quality e-Learning based instruction on general management and soft skill development is much harder to find.

c) Is it possible to customize the product or service being offered?

Web-based technology provides an opportunity for mass customization because it is possible to treat every learner as a distinct individual, and to find ways of delivering to each customer exactly what they need. It is no longer necessary to accept a “one size fits all” principle. In considering e-Learning offerings it is important to ask about customizability and the price and speed at which it can be achieved.

d) How flexible and focused is the learning experience provided?

It is vital to opt for systems that have the flexibility required to meet specific learning needs as rapidly as possible. The e-Learning system must avoid a situation where learners have to spend hours surfing the Internet in search of information, only to find that they have to sort through piles of junk to find the precious “nuggets” that they require. In selecting a learning or course provider, it is vital to avoid this problem. Tagging, hyper-linking and search capacities built into the operational core of the product can help users find exactly what they need. Further, as technology develops, each learning experience should be capable of being accessed in a flexible way to allow the user to drive directly to what is needed, in a manner that suits their learning style.

e) How interactive is the learning system?

In selecting a learning product or service it is vital to select a system that involves and intrigues the learner. Systems may remain unused if text is just put on screen and the user just scroll and scroll, or which try to dictate the pace and style of learning. Successful learning systems must create a collaborative, interactive experience where the user and system act as partners in achieving learning goals.

f) Is the learning system intended to complement or replace face-to-face styles of education?

The challenge is to use e-Learning where it works best and retain classroom or other face-to-face modes of instruction where they can pay real dividends. The challenge of e-Learning is not to get everything on-line and communicate solely via modem, voice or video exchange. Face-to-face interaction and exchange remain a valuable element of many learning experiences. There are times when it is important to bring people together so that they can see and experience each other, share stories, empathize and learn from each other in very personal and direct ways.

g) Does the system allow you to enrich learning through complex behavioural simulations?

As bandwidth increases it is possible to deliver very sophisticated learning experiences through online technology. However, most users do not yet have the equipment needed to benefit from this kind of application. As a result, most complex online simulations have to occur in some kind of special training context or lab.

h) Does the desire to assess and evaluate learning dominate the learning process and end up getting in the way of real learning and the enthusiasm with which users will embrace the system?

It is important to ensure that online learning produces real, positive outcomes. In purchasing e-learning products and services it is thus important to review how evaluation of learning is to occur and whether it is provided in a way that will support rather than inhibit the learner. It is important to remember that what works in classroom-led training with live instructors will not always work in online settings.

E-learning technology brings new challenges to the whole process and philosophy of learning and training assessment and evaluation. A new approach to evaluation may be required.

i) To what extent does the learning product or service result in the creation and sharing of new knowledge?

In a knowledge economy the ability to learn in a way that produces new ideas, knowledge and practical insights is vital. It is also vital that this knowledge be shared so that it is not locked in individual heads, and does not leave when people move to new positions or leave for a job in another organization. Many learning systems fail miserably on this score for two reasons. First, the learning does not always result in practical insights that can make a difference in real work situations. Second, the learning system does not do a good job in capturing and sharing the new knowledge that is created as the result of successful learning experiences so that it can be used more broadly as a corporate resource.

j) How secure and confidential is the learning system?

Security is a big issue in most corporate information systems. Line managers, HR professionals and R&D specialists – to name just a few of the groups interested in this issue – are anxious that proprietary information remains proprietary and that confidential information doesn't get into the wrong hands. And, last but not least, individuals usually want to know that what is private and confidential remains private and confidential. It is thus important to know how a new learning system or application, particularly those delivered via the Internet, will interface with existing environments and whether security will be jeopardized.

3.6 CONCLUSION

The utilisation of Information and Communications Technology and its tools in education in relation to e-Learning has been discussed providing various tools that are commonly and unknowingly used. The chapter also discussed the technical and human resource requirements for the implementation of e-Learning –using e-Learning teams and questions to be asked before embarking on e-Learning.

The next chapter (chapter 4) focus on the opportunities and challenges that FET Colleges face in the implementation of e-Learning from a policy point of view.

CHAPTER 4

OVERVIEW OF FET COLLEGES – CHALLENGES AND OPPORTUNITIES

4.1 INTRODUCTION

Further Education and Training Colleges provide or suppose to provide a variety of learning programmes. The role and challenges that face FET colleges is to contribute to the skills development strategy of South Africa by reaching magnitudes of life-long learners. The challenges and opportunities that face the colleges are discussed in this chapter. The legislative framework and government initiatives for the FET sector to utilise e-Learning are also discussed

4.2 FET COLLEGE'S VOCATIONAL FIELDS

FET colleges provide education and training in six broad vocational fields:

- Art – Music
- Business Studies
- Educare-Social Services
- Engineering Studies
- General Education
- Utility Studies

Of the DoE programme enrolments, 89% are enrolled in two vocational fields: Business Studies and Engineering. Business Studies has 48% of total FTE enrolments and Engineering 41%. This suggests too narrow a programme mix for the diverse education and training needs required at FET level for the needs of the country. Although Business Studies and Engineering are dominant in all of the provinces, the ratio between Business Studies and Engineering Studies differs markedly from one province to another.

For example, 77% of the FTEs enrolled in the Northern Cape were enrolled for Business Studies and 22% for Engineering Studies, while Gauteng had 44% of their FTEs enrolled for Business Studies and 46 for Engineering Studies (Powell and Hall, 2002: 21-22).

4.3 THE ROLE OF FET COLLEGES

4.3.1 Mandate for FET College

In the context of the mandate of the Human Resource Development Strategy [Online] and the National Skills Development Strategy 2, the FET band is essential both for vocational skills development and serve as a bridge between general and higher education. On the one hand FET Institutions are required to provide vocational preparation for the workplace. On the other hand, FET institutions are viewed as a potential resource for training in the workplace and therefore needing to offer demand-led training. The FET institutions interface across a number of structures and sectors, including the Departments of Education and the Department of Labour, Sector Education and Training Authorities (SETAs), Umsobomvu Youth Fund and workplaces.

The FET Act, 98 of 1998 in its preamble desires, among others to:

- ENSURE access to further education and training in the work-place by persons who have been marginalised in the past, such as women, the disabled and the disadvantaged;
- PROVIDE optimal opportunities for learning, the creation of knowledge and the development of intermediate to high level skills in keeping with international standards of academic and technical quality;
- ADVANCE strategic priorities determined by national policy objectives at all levels of governance and management within the further education and training sector;

- PURSUE excellence; promote the full realisation of the potential of every student and member of staff, tolerance of ideas and appreciation of diversity;
- RESPOND to the needs of the Republic, the labour market and of the communities served by the institutions;
- COMPLEMENT the skills Development Strategy in co-operation with the Department of Labour.

What the Act desires, which is ENSURE access, supports e – Learning as a method of education content delivery. However, according to the National Education Annual Report (2004/2005) to the Minister of Education a policy to guide the FET institutions in the implementation of e-Learning is not yet finalised. The FET Act provides the opportunity while lack of a guiding policy poses a challenge for the FET Colleges.

4.3.2 Opportunities for FET Colleges

According to the National Department of Education annual report (2005) FET institutions have the opportunity to propose and embark on e-learning through the funds made available through the Skills Development Levy in terms of the Skills Development Act 97 of 1998. FET institutions may approach different Sector Education and Training Authorities for such funds in order to embark on e-Learning.

Furthermore according to the Department of Education (2005:14), strategic plans for colleges, including funding requests for implementation of new methods for training delivery, were assessed and a recapitalisation plan was developed for FET institutions. The recapitalisation plan seeks to assist colleges with funding to address infrastructural and capacity shortcomings – be it human and or physical resource requirements.

According to Motshekga (2006) [Online] the Member of Executive Council (MEC) responsible for education in the Gauteng Province in her budget speech, R106 million conditional grant for the modernisation and development of the FET sector has been allocated by National Government. FET colleges must offer high-level vocational skills, especially in the areas that are critical for the Gauteng province and South Africa's economic development. The modern method of providing education is e-Learning. Motshega further mentions that in the recapitalization of the FET sector the private sector will be engaged to come on board of this process, and also forge links with the local government authorities in the province.

Motshega (2006) [Online] announced that the Further Education and Training (FET) in the Gauteng Province will see urgent redress related to programme offerings that must begin to speak directly to economic challenges and accredited skills training on the NQF levels become a reality. According to Motshega (2006) [Online] the idea that all citizens should become lifelong learners will begin to encourage the development of learning communities that support and empower urban and township regeneration imperatives. The e-learning strategy will help implement the e-Education White Paper. It will also support the Gauteng Online Programme by infusing e-learning into the technology solution.

According to Budget review (2006:106) and Motshekga (2006) R1, 9 billion is proposed for the recapitalisation of further education and training (FET) colleges. Among other projects identified is a connectivity project to provide a network relay between campuses of various FET colleges for data transfer, e-mail and internet usage, support for an information management system and capacity for e-learning functions.

4.4 CHALLENGES FACING FET COLLEGES

4.4.1 Political Challenges

Unwin (2003) [Online] explains that by occupying the middle ground, Colleges of Further Education and Training face an immediate problem of identity. Unlike schools and universities, Colleges have the potential to service a much wider community of learners and to offer a bigger range, type and level of programme. Such diversity can, however, mean that Colleges struggle to achieve recognition and/or status for being specialists in particular types of provision.

There is a subtle political power struggle between the ministry of Education and Labour as far as who is or should take responsibility as far as skills development in the FET sector is concerned in South Africa, with specific reference to the FET Colleges sector. Coetzer (2005:14) confirms that the power struggle is on the part of skills development. Coetzer (2005:14) quotes the Minister of Labour as having said that different aspects of education should be entrusted to different ministers and that Further Education and Training (FET) Colleges are in “a shamble”. According to reports, as Coetzer (2005: 15) mentions, the Minister of Labour suggested that there is a “looming debate that the country’s FET colleges be taken away from the Department of Education” and should be transferred to the Department of Labour to ensure that FET Colleges work more effectively with the Sector Education and Training Authorities (SETAs). It will remain a challenge for FET institutions to deliver to its mandate while these debates go on.

4.4.2 Technological Challenges

The White Paper on e-Education (2004) [Online], laments that South Africa is experiencing a digital divide. The following statistics are provided on the use of ICT: Africa recorded a 20% increase in 2002, mostly due to increased usage in urban areas and countries with a higher GDP (Gross Domestic Product) per capita. However, while 72.7% of Americans currently use the Internet, only 5.4% of South Africans have access to and use the Internet. The implication is that most educational institutions have limited access to the Internet especially for teaching and learning.

The White paper on e-Education (2004) emphasizes that the digital divide is not only about connectivity and infrastructure disparities; it is also about:

- Local content development in terms of the number and quality of local websites, local language content and the use of local online content by key sectors.
- Developing the capacity of the workforce by improving Internet access and educational offerings in schools and colleges, creating digital libraries for universities, promoting professional training institutes, and stimulating the economy to absorb people with a variety of ICT skills.

The above are some of the challenges South Africa faces in comparison with International Countries. The FET sector is no exception.

4.5 NATIONAL e – LEARNING POLICY

In the South African context, the concept of e-Education revolves around the use of ICT to accelerate the achievement of national education goals. e -Education as defined in the White Paper on e-Education (2004) is about connecting learners and teachers to each other and to professional support services and to provide platforms for learning.

e-Education is more than developing computer literacy and the skills necessary to operate various types of information and communication technologies. It is the ability to:

- Apply ICT skills to access, analyse, evaluate, integrate, present and communicate information;
- Create knowledge and new information by adapting, applying, designing, inventing and authoring information
- Function in a knowledge society by using appropriate technology and mastering communication and collaboration skills.

4.5.1 Infrastructure and Connectivity

In support of ICT in education and training the Telecommunications Act 103 of 1996 as amended in 2001, called for the development of an Educational Network and the implementation of an a discounted connectivity rate for GET and FET institutions.

4.6 CONCLUSION

This chapter highlighted the mandate of FET colleges with specific reference to the e-Learning opportunities and challenges that face this sector of education. Government initiatives such as The White paper on e-Education, Telecommunications Act 103 of 1996 as amended in 2001 and the FET act 98, of 1998 which were discussed support the use of e-Learning.

Further Education and Training Colleges are well positioned to exploit the advent of e-Learning. The South African government through policies view FET Colleges as a potential resource for training in the workplace for the delivery of demand-led training. FET colleges are required to facilitate and ensure access to further education and training in the work place. It was pointed out that the funds to transform the FET infrastructure have been made available through the recapitalisation plan project. The picture painted in this chapter depicts a level playing field for colleges to can embark on e-Learning especially for learners who are already in the workplace.

The following chapter (chapter 5) discusses the research methodology followed in this study.

CHAPTER 5

RESEARCH METHODOLOGY AND DESIGN

5.1 INTRODUCTION

Lewis (2003:32) is of the view that the nature of information or evidence required would determine the choice of the qualitative or quantitative research technique. The purpose of this research is concerned with the investigation and understanding of the implemented and or use of e-Learning in FET institutions.. The research methodology used and the analysis thereof are discussed in this chapter.

5.2 RESEARCH METHODOLOGY

5.2.1 Qualitative techniques

Evaluation Research: Qualitative techniques are employed for this research, which included a Case Study approach (selected Colleges as explained in the sampling method used in 5.3) because the two are strongly associated according to Lewis (2003:32). Mouton (2003:161) defines Evaluation Research as a method used to evaluate the performance of programmes in their natural settings, focusing on the process of implementation rather than the outcomes. The research's intention is to investigate and get a holistic picture of e-Learning in selected FET institutions in South Africa. Qualitative research as explained by Fraenkel and Wallen (1990:12) is used to provide a holistic picture in a setting.

According to Byrne (2001) one goal of qualitative research is to increase understanding of a phenomenon as opposed to generalizing data extrapolated from the sample to the population at large. This study is about understanding why FET institutions are not utilising or optimally utilising e-Learning for the provision of education and training.

5.2.2 Quantitative techniques

Patton (2002:14) mentions that quantitative methods require the use of standardised measures so that the varying perspectives and experiences of people can be fit into a limited number of predetermined response categories to which numbers are assigned. In this study pre-coded questionnaires are used to collect data and the data is summarised and analysed using basic statistics. The advantage of a quantitative research method as given by Patton (2002:14) is that data can be compared and aggregated statistically - e.g. descriptive statistics - and thus give a set of findings that can be generalized with the necessary statistical verification.

5.3 SAMPLING SELECTION RATIONALE

5.3.1 Further Education and Training Colleges in South Africa

In 2002 according to Powell and Hall (2002:14) 152 technical colleges in South Africa were merged with other technical colleges, colleges of education and/or manpower training sites to form 50 new Further Education and Training Institutions in terms of the Further Education and Training Act, 98 of 1998. For the purpose of this research the sample population was limited to the Gauteng Province only.

5.3.2 Why the Gauteng Province

A study conducted by the National Business Initiative (NBI) as documented by Powell and Hall (2002) indicates that Kwa-Zulu Natal Province accounts for 18% (9 colleges) of the total number of FETs in South Africa, which is the highest in the country, followed by the Gauteng Province at 16% (8 colleges).

However, the majority of learners (32%) are enrolled in Gauteng, while only 16% are enrolled in KwaZulu Natal, which is half the number of learners enrolled in the Gauteng Province. A further comparison reveals that Gauteng as compared to Kwa-Zulu Natal has the most number of delivery sites or campuses. Therefore it can be concluded that the Gauteng provinces has the most number of learners and campuses, which makes it ideal to sample.

5.3.3 Sampling

Lewis (2003:49) suggests that selecting research settings and populations involves identifying those, by virtue of their relationship with research questions, are able to provide the most relevant, comprehensive and rich information. The researcher actively selects the most productive sample to answer the research question. Judgment sampling also known as purposeful sampling is used for this study.

The logic and power of purposeful sampling as explained by Patton (2002:230) lie in selecting information-rich cases for study in depth. Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the research. Marshall (1996: 523) mentions that this can involve developing a framework of the variables that might influence an individual's contribution and will be based on the researcher's practical knowledge of the research area, the available literature and evidence from the study itself. This is a more intellectual strategy than the simple demographic stratification of epidemiological studies, though age, gender and social class might be important variables.

Patton (2002:236) indicates that critical cases are those that are particularly important in the scheme of things. Critical case selection permits logical generalization and maximum application of information to other cases because if it's true of this one case it is likely to be true of all other cases. The choice of

conducting the study in the Gauteng Province becomes obvious as Gauteng is the economic hub of South Africa. Gauteng Province has the most number of campuses approximately (32) as compared to (23) of Kwa Zulu Natal. According to the Department of Trade and Industry (2006) [Online] Gauteng is said to be the economic hub of South Africa and it is more likely to embark on e-Learning as compared to other provinces and thus of particular importance in the scheme of things.

Due to time and possible costs to conduct the study in all Colleges in Gauteng three Colleges are sampled, Central Johannesburg College – which has the highest number of learners in Gauteng and also has a campus designated for ICT training, Ekurhuleni West College – which has the most number of campuses – Sedibeng College, which is the smallest College with three delivery sites next to WestColl. Although WestColl is the smallest college with only two delivery sites it has been excluded for this study since there was a possible incorporation of one of its campus into the Northwest province at the time of this study.

5.4 DATA COLLECTION METHOD

Two methods using two separate questionnaires A and B were used to collect data; pre-coded questionnaires for interviews and self-administered pre-coded questionnaire for surveys. Refer to appendices 1 and 2.

The two methods were best suited to facilitate the achievement of the established research objectives in this study. Questionnaire A was completed during an interview with a senior manager responsible for academic affairs based at a college's central administration office or Head Office. Questionnaire B was sent to college campuses to be completed by the most senior representatives of various departments – Head of Department/Senior Lecture. Questionnaire B was sent out electronically – via e-mail and fax, and received back as such. However in other instances the questionnaires had to be physically delivered and collected.

5.4.1 Interviews

In-depth interviews were held with senior managers responsible for academic matters utilizing pre-coded questionnaire. The aim was to allow the respondents to justify choice of an answer provided. The aim was to develop an understanding and an interpretative framework of e-Learning in FET institutions. Fisher (2004:133) mentions that the questions asked in a pre-coded interview are organised into a logical sequence and for most questions the respondent is given a series of options and asked to choose a given number. Interviews were conducted with a senior manager responsible for academic matters per College. Therefore only three senior managers were sampled and interviewed.

5.5.2 Surveys

The questionnaires were distributed using most common ways. Fisher (2004: 135) indicates that common ways of distributing surveys are through the use of mail, fax, newspapers/magazines and e-mail. They can also be distributed in person, for instance as part of an intercept survey. Depending on the method of survey administration, there is a number of sampling frame considerations, such as who can or cannot be reached by fax or Internet, or whether there is a sample bias (Anon₂: 2006). At the time of this study there were 33 Head of Departments in the Colleges under this study. The questionnaires were distributed via e-mail and collected personally by the researcher.

5.6 QUESTIONNAIRE DESIGN

Two sets of questionnaires were used for this study as mentioned and explained above. The objective of using two questionnaires was to determine if there are any gaps in the understanding of e-Learning between senior manager (Policy makers) and Head of Divisions (Operational managers).

The questionnaires were designed using the same format of questions, namely dichotomous, checklist, likert, multiple choice and open-ended questions. STATKON assisted in finalising the questionnaire format and coding.

Questionnaire A was divided into two sections. Section A was concerned with policy related matters and section B dealt with e-Learning related questions. Questionnaire B comprised of almost 80% of questions extracted from Questionnaire A and had only one section of seventeen questions with the first three being filtering questions that assisted the researcher in excluding respondents who did not fit the criteria.

5.6.1 Dichotomous questions

Where a clear-cut issue was dealt with, dichotomous questions were used. Fisher (200:152) explains that dichotomous questions offer respondents only two alternatives to choose between - either a YES and NO or TRUE/FALSE to give an example.

5.6.2 Checklist questions

The checklist questions used provided up to ten options for respondents to choose from. According to Fisher (2002:152) the skill in drafting these questions lies in giving unambiguous options that are mutually exclusive.

5.6.3 Likert scale

Questions formulated using Linkert scale were used to measure the overall opinion of respondents. Fisher (2002:153) advises that the basic structure of a Likert scale is to provide a series of statements, some negative and some positive in tone, and where respondents have to choose between categories – in

this study a five-point scale ranging from strongly agree to strongly disagree.

5.6.4 Linking research objectives with research questions

Table 5.1 below show how the questions from the two questionnaires link with the research objectives. (Aa) represents questions from Questionnaire A section A, Ab Questionnaire A section B. Questionnaire B is represented by the letter B.

Table 5.1 Linking research objectives with research questions

To evaluate how FET institutions comprehend the concept – e-Learning	Aa1; Ab19; B14, 15
To discover what resources required for the implementation of e-learning are available in FET institutions	Ab1, 2; Ab11; B4; B10; B12
To asses the level of ICT utilisation for the delivery of education and training	Ab1; Ab4; Ab9, 10; B3;B13
To discover whether a platform is available to support e-Learning (Internet, Intranet, Interactive website etc.)	Ab5, 6,8; Ab11; Ab13, 14; B9
To determine whether FET Colleges are ready to can gradually blend conventional methods of teaching to e-learning (blended learning)	Ab15; Aa2; B8; B12, 13;
To investigate management support for e-Learning.	Aa2; Aa3; Aa4; Ab18; Ab20; B7
To determine the level of competency on the use of ICT for learning in FET institutions	Aa5; Ab16, 17; B16,17
To investigate any government support to FET institution for e-Learning	Aa5;Ab20;

5.7 CONCLUSSION

This chapter gave a detailed description of the research methodology used in this study and how the methodology assisted in achieving the research objectives through linking of the research objectives and the questions used. The research design was also explained in detail including how the sample was arrived at.

The following chapter (chapter 6) will focus on the analysis and interpretations of the data collected. It will also answer the research question as formulated in

chapter 1

CHAPTER 6

RESEARCH FINDINGS AND INTERPRETATIONS

6.1 INTRODUCTION

This chapter reports on the research finding from the empirical study. The findings are presented in two parts, that is, findings from questionnaire A followed by findings from questionnaire B. The report follows the structure of the questionnaires.

6.2 FINDINGS – Questionnaire A

The research findings from questionnaire A are based on individual interviews that were conducted by the researcher with three senior managers representing the three colleges under this study. Although pre-set responses were recorded the interviewees were allowed time to support the answer chosen where possible. Section A and section B are discussed separately.

6.2.1 Findings: Questionnaire A: Section A

Q1: Understanding of the concept, e-Learning

At the time of this study none of the colleges was directly involved in e-Learning. As a result there was no written institutional definition of what e-Learning is in the colleges. However, below is a summarised definition of the responses received.

“e-Learning is high quality teaching and learning using the Internet for lifelong learners who are already employed. The learners need not be physically at the college to receive training” Questionnaire A: Section A, question 1

It was reported that the e-Learning is being discussed at strategic planning meetings for future use. Some colleges indicate that e-Learning has been proposed as part of the recapitalisation planning project. Otherwise there is no immediate plan to embark on e-Learning.

Q2: Support for Information Communication Technology development trends

The vision and mission of colleges under this study does not explicitly and directly mention or reflect any support for ICT development trends, though some respondents indicate that their vision does support ICT to a large extent. The responses provided are thinly spread as shown in **Table 6.1**. The college objectives to some extent do support ICT development trends although there is no e-Learning strategy in place except in one institution where there is an ICT centre in one of the campuses. The ICT centre does offer a 12 hours e-Learning readiness course where learners are exposed to information about e-Learning. It needs to be pointed out that the senior managers interviewed did mention that e-Learning is being discussed at strategic level within the colleges and a lot of the discussions are still in the planning phase.

Of the three respondents, two who answered are of the view that the Student Representative Council supports use of ICT resource to some extent.

Table 6.1: Support for ICT Development trends

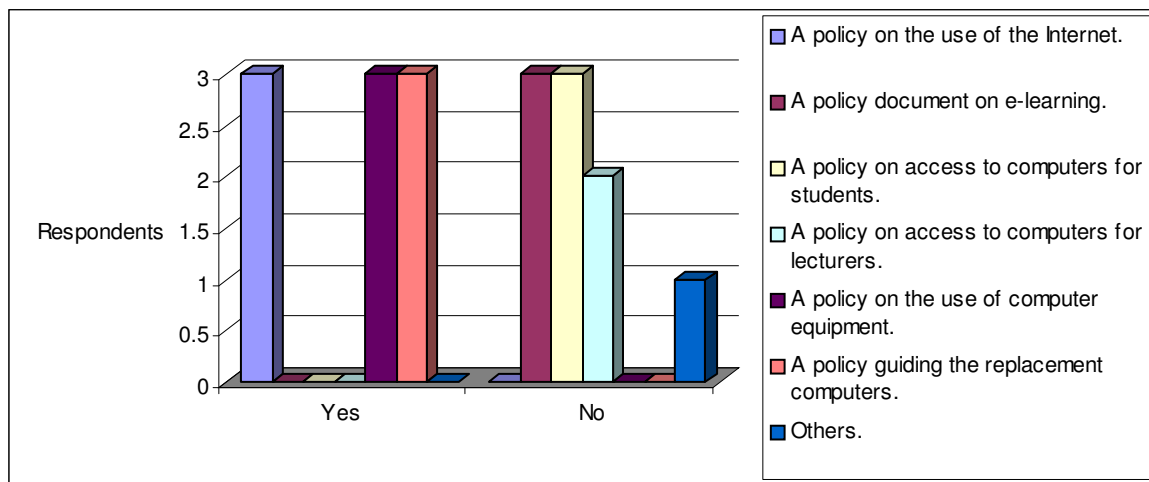
	Some Extent		Moderate Extent		Large Extent		Total	
The Vision of the College.	1	33.30%	1	33.30%	1	33.30%	3	100.00%
The Mission of the College.			2	66.70%	1	33.30%	3	100.00%
The Objectives of the College.	1	33.30%	1	33.30%	1	33.30%	3	100.00%
Student Representative Bodies.	2	100.00%					2	100.00%
College policy documents.	1	50.00%			1	50.00%	2	100.00%

Source: Questionnaire A: Section A: Question 2

Q3: Policy guiding the use of ICT resources

This is an attempt to establish the existence of systems to guide and support e-Learning. According to senior managers (**Figure 6.1**) three critical policies required for e-Learning do not exist, for an example, *e-Learning policy an access to computers for students and lecturers policy* just to mention one. This discovery contradicts with information provided by some of the HODs that such policies do exist. What is encouraging is that the respondents mentioned that some of the policies are under development and others are not written down policies but there is a practice adopted informally by those involved in ICT to follow certain procedures.

Figure 6.1: Available formal policy documents – senior managers



Source: Questionnaire A: Section A: Question 3

Q4: The most important policy

The answers given in this question were spread from e-Learning policy, Access to the use of computers to A policy on the use of the Internet.

Q5: Management skills to deal with change management issues

Change management is one of the skills required by managers for the implementation of e-Learning within an institution. All respondent indicate that managers can, to a moderate extent, deal effectively with staff and students resistance to change in terms of learning delivery medium-**Table 6.2.**

There is a moderate to some extent (66.7% and 33.3%) response split on the ability to effectively communicate change to both employees at all levels and students and also to adapt to change in policy documents from the National Department of Education. The opposite is seen when coming to dealing with staff and student expectations.

Table 6.2 Change management skills

	Some Extent		Moderate Extent		Large Extent	
To effectively deal with staff resistance to change in terms of learning delivery medium.			3	100.00%		
To effectively deal with students resistance to change in terms of teaching and learning medium.			3	100.00%		
To effectively communicate change to employees at all levels.	1	33.30%	2	66.70%		
To effectively communicate change to students.	1	33.30%	2	66.70%		
To effectively deal with staff expectations as far as learning methods are concerned.	2	66.70%	1	33.30%		
To effectively deal with student's expectations as far as learning methods are concerned.	2	66.70%	1	33.30%		
To effectively adapt to change in education policy documents from the National Education Department.	1	33.30%	2	66.70%		
To Foster teamwork among staff.			2	66.70%	1	33.30%

Source: Questionnaire A: Section A: Question 5

Fostering teamwork is viewed as the most dominant skill although rated by 1 person as a large extent.

In general managers at FET Colleges do have the right kind of skills required to manage change during e-Learning implementation.

6.2.2 Findings: Questionnaire A: Section B

Q1 – Q 3: Information Technology (IT) Department responsible for the delivery of learning content

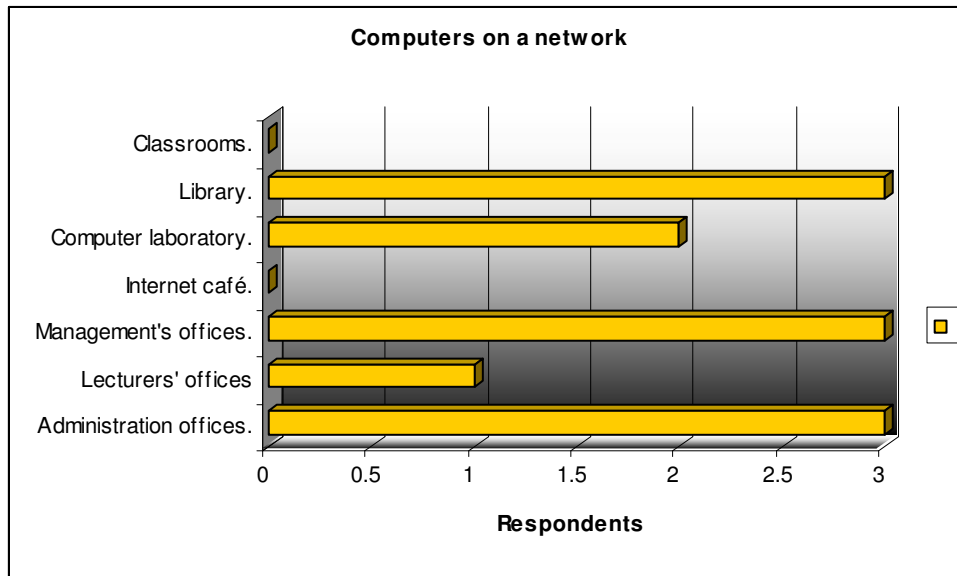
One of the three colleges under the study has a dedicated IT Department employing a total of 10 staff members. The ITC centre is a brain-child of a partnership between government and the private sector. The other two colleges have the IT departments integrated in the Business Studies Department and under the Academic Affairs manager.

Q4: Computers dedicated for training and development in the college

The number of computers dedicated for training and development ranges from 500 to 1000 per college. Two colleges have less than 600 computers and one college registered more than 600 computers dedicated for training and development. The interviewees mentioned that most of the computers are used in the Business studies department for computer training based programs such as pastel and Ms Office. The engineering department uses computers for training students on AutoCad. In one college an informal computer course is run for engineering students as an add-on to the main stream engineering programs.

All colleges have a student head count of more than 10 000. If one takes an average of 750 computers per college then there is an average of 1 computer per 8 learners.

Figure 6.3 Computers connected on a network



Source: Questionnaire A: Section B: Question 6

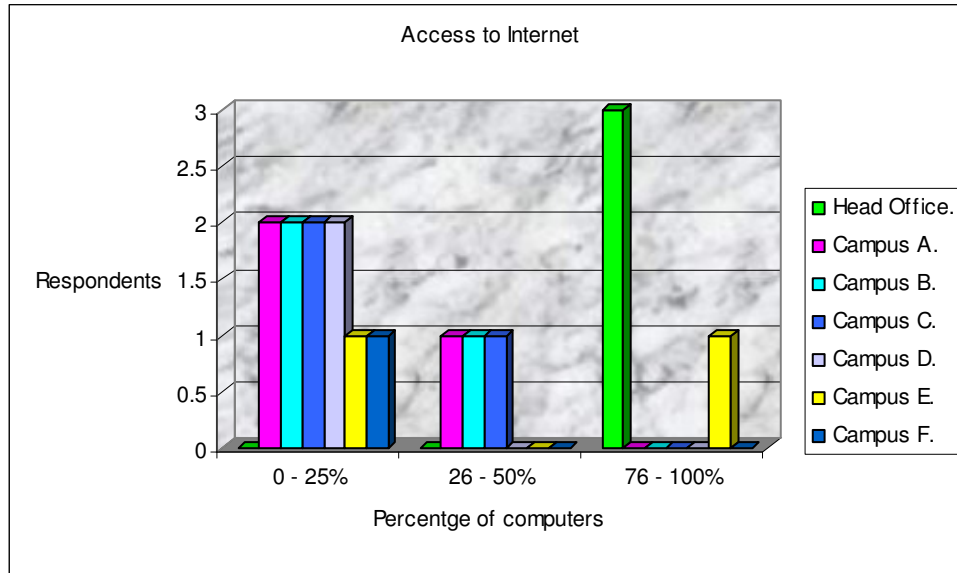
Figure 6.3 shows that computers in the classrooms and the Internet café are not on a network. All participants to this study confirm that more computers in the libraries, management offices and administration offices are connected on a network as compared to computers in the computer laboratories and classrooms respectively.

Q7: Number of learners registered at the College (Head count)

All Colleges have more than 10 000 students registerd

Q8: Percentage of computers with access to the Internet

Figure 6.4 Computers with access to Internet



Source: Questionnaire A: Section B: Question 8

The finding in **Figure 6.4** is that all respondents confirm that computers (76-100%) at head offices have access to the Internet. This confirmation follows the establishment earlier that all computers at head offices are connected on a network. Campus access to the Internet is predominantly at 0-25% of the available computers with only one campus rated at 76-100% of the computers. It has been confirmed in the literature study that for online learning connection to the Internet is a requirement.

Q9: Connection method to the Internet

Table 6.3 Method of connection to Internet

	Dignet	Dial Up	ADSL	Wireless
Head Office.	2	0	1	0
Campus A.	2	0	1	0
Campus B.	1	1	1	0
Campus C.	1	1	1	0
Campus D.	1	0	0	1
Campus F.	1	1	0	0
Campus F.	0	0	0	0

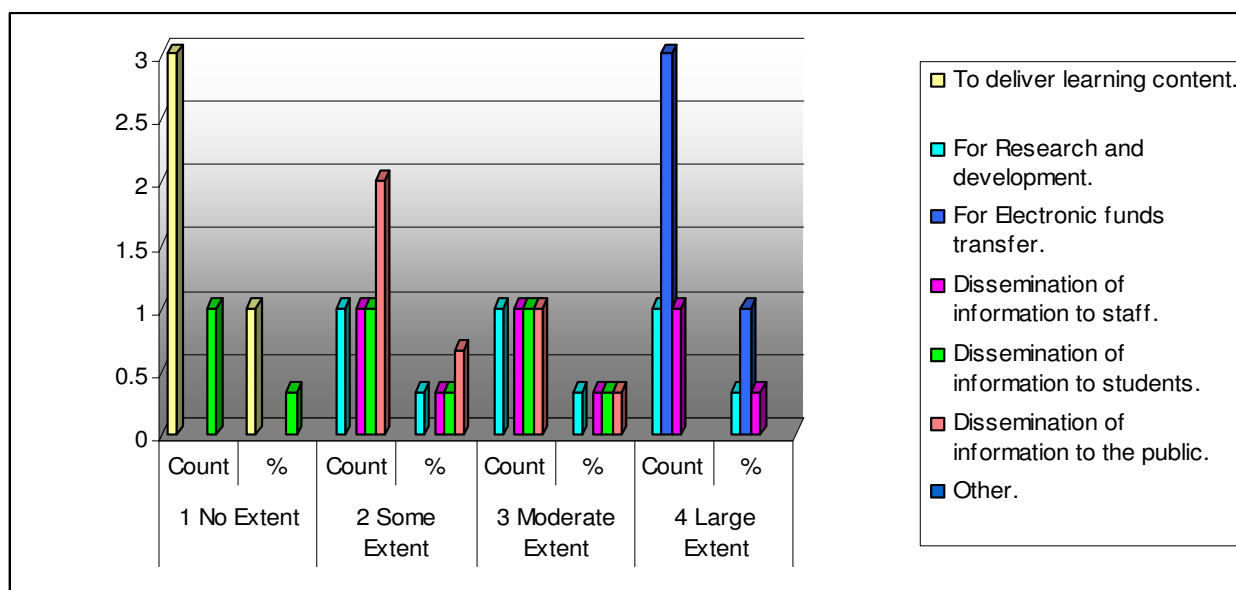
Source: Questionnaire A: Section B: Question 9

Although Dignet is the most used method for accessing the Internet, ADSL is the second used method. Dial-up is said to be very slow and can not handle heavy information traffic but some colleges still use Dial-up to access the Internet. Only one college uses wireless connection. It is noted that some interviewees mention that some other faster connection methods are still being investigated for future use.

Q10 – Q13: What the Internet is used for

What is discovered in **figure 6.5** is that the Internet is used to a large extent for making electronic funds transfer as confirmed by all interviewees. In is also noted that doing research and dissemination of information to staff is at a large extent. A sad finding is that the Internet is not used for the delivery of learning and dissemination of information to students but to some extent to the public and students. This is done through the existing college websites.

Figure 6.5 Internet use



Source: Questionnaire A: Section B: Question 10

All colleges have Websites. What was discovered of particular concern is that the websites are not interactive. **Table 6.5** shows all the functions that learners can not perform online through the college's websites. Learners can only read and get information about the college. However, the interviewees mentioned that there are future plans to get the websites interactive.

Table 6.1 Online functions for learners

	No Extent		Total	
	Count	%	Count	%
Register courses online.	3	100.00%	3	100.00%
Update personal information online.	3	100.00%	3	100.00%
Access financial records online.	3	100.00%	3	100.00%
Access academic records online.	3	100.00%	3	100.00%
Access learning content.	3	100.00%	3	100.00%
Download assignments.	3	100.00%	3	100.00%
Pose question and comments to the lecturer.	3	100.00%	3	100.00%
Access the college's library catalogue.	3	100.00%	3	100.00%

Source: Questionnaire A: Section B: Question 13

Q14 – Q15: The Intranet

Two of the three colleges have intranet connections among campuses and head office. The intranet is mainly used for information and administrative function and sharing of information among campuses and head offices as seen in table 6.5.

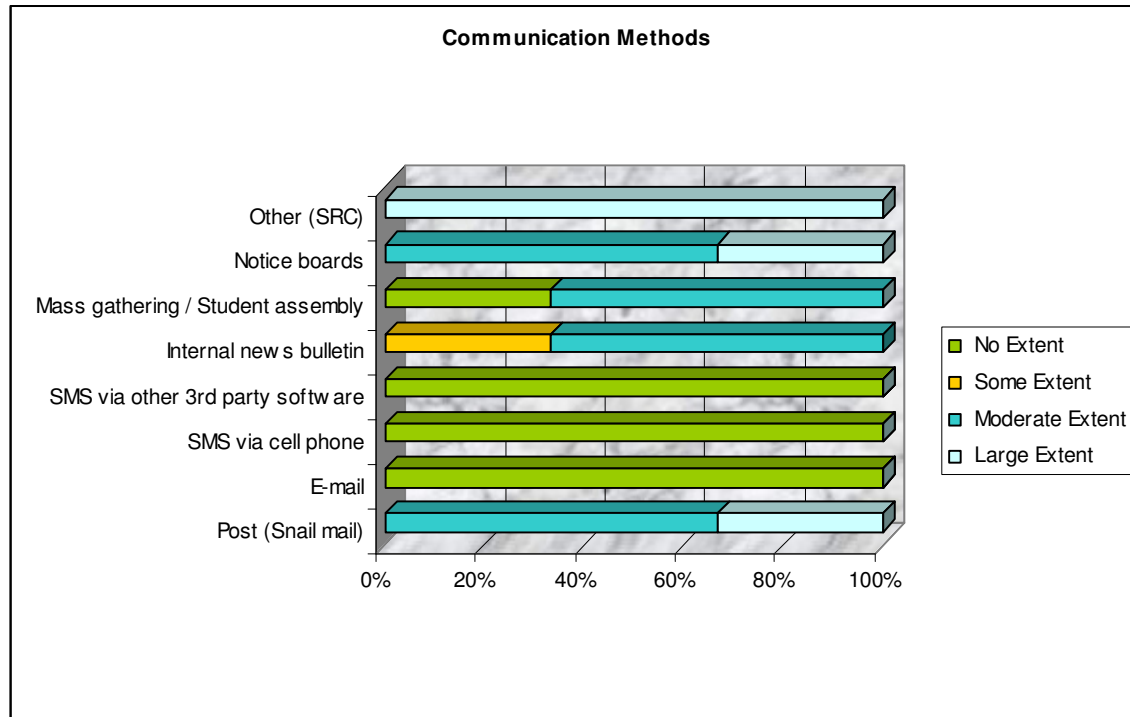
Table 6.5 Functions performed through the Intranet

	No Extent		Some Extent		Large Extent	
	Count	%	Count	%	Count	%
Learners can register courses.	2	100.00%				
Learners can update their personal information.	2	100.00%				
Learners can access their financial records.	2	100.00%				
Learners can access their academic records.	2	100.00%				
Learners can access learning content.	2	100.00%				
Learners can download assignments.	2	100.00%				
Learners can pose questions to the lecturer.	2	100.00%				
Learners can access the college's library catalogue.	2	100.00%				
Campuses can share administrative information.			1	50.00%	1	50.00%
Information can be transferred from campus to campus.			1	50.00%	1	50.00%

Source: Questionnaire A: Section B: Question 15

Q16: Communication method

Figure 6.6 Communication methods to students



Source: Questionnaire A: Section B: Question 16

Chapter 2 and 3 provided literature information on how Information Communication Technology can facilitate e-Learning. Respondents agree that most students have access to mobile phones. Observation made in **figure 6.6** shows that FET Colleges do not use Short Message Systems (SMS) and e-mail when communicating with learners. Methods that are used to moderate and large extend include notice boards, post, mass gatherings and internal bulletins. It was also concluded that the methods that are being used for communication with learners do not play a significant role in an e-learning environment.

Q17: Use of electronic devices for the delivery of learning

An interesting observation in **table 6.6** is that the more complicated an electronic device is the lesser the extent of usage. Overhead projectors are rated as used to large extent. On the extreme side mobile phones and learning portals are used to no extent in FET colleges.

Table 6.6 Use of electronic devices for learning

	No Extent	Some Extent	Moderate Extent	Large Extent
Overhead projector	0	0	1	2
Data projector	0	2	1	0
Television	0	2	1	0
Video machine	0	2	1	0
DVD player	2	1	0	0
CD Rom	0	3	0	0
Mobile phone	3	0	0	0
Portal, e.g. WebCT	3	0	0	0

Source: Questionnaire A: Section B: Question 17

Q18: Use of Computer equipment

Table 6.7 Optimal use of computer equipment

	Disagree	
	Count	%
My college unnecessarily purchases computer equipment	3	100.00%
Computer equipment purchased by my college is underutilized	3	100.00%
Computer equipment available at my college is already obsolete	3	100.00%

Source: Questionnaire A: Section B: Question 18

Senior management participating in this study are of the view that computer equipments are not purchased unnecessarily.

An interesting finding as shown in **table 6.7** is that computer equipment purchased are used optimally

Q19: General statements relating to e-Learning

Table 6.8 Advantages of e-Learning

	Agree		Neutral		Disagree		Total	
	Count	%	Count	%	Co	%	Count	%
reduces training time	2	66.70%	1	33.30%			3	100.00%
reduces training costs	2	66.70%	1	33.30%			3	100.00%
results in higher content retention by learners			3	100.00%			3	100.00%
is flexible	2	66.70%	1	33.30%			3	100.00%
keeps learning material consistent	2	66.70%	1	33.30%			3	100.00%
makes it easy to update learning material	3	100.00%					3	100.00%
provides a fear-free environment for learners	2	66.70%	1	33.30%			3	100.00%
has a high start-up cost	3	100.00%					3	100.00%
material is difficult to maintain due to the lack of ownership of Web site	1	33.30%	2	66.70%			3	100.00%
cannot be extended to those students who are not computer literate	2	66.70%			1	33.30%	3	100.00%

Source: Questionnaire A: Section B: Question 19

Advantages of e-Learning are discussed in detail in the literature study-chapter 2. The respondents to this study agree with most of the stated advantages in **Table 6.8**. except that there is no support from the Gauteng Department of Education contrary to the literature study in Chapter 5. The question is then, why are FET institutions not taking part in e-Learning if most of the responses are to the advantages of e-Learning is either neutral or in agreement?

Q20: General impressions on e-Learning

Table 6.9 General impression on e-Learning

	Agree		Neutral		Disagree	
	Count	%	Count	%	Count	%
FET Colleges do not have the appropriate infrastructure to embark on e-learning as a method of learning content delivery	3	100.00%				
There is insufficient number of lecturers with the necessary expertise to use e-learning	3	100.00%				
The calibre of learners at my college will not cope with e-learning requirements	1	33.30%			2	66.70%
College management does not support the use of e-learning as a mode of content delivery			1	33.30%	2	66.70%
e-Learning is a little known phenomenon in the public FET sector	2	66.70%	1	33.30%		
There is insufficient support for e-learning from the Gauteng Department of Education	3	100.00%				
The mission of the college does not support the use of e-learning in the provision of training			1	33.30%	2	66.70%
The FET sector is not geared for the e-learning type of learning content delivery	1	33.30%			2	66.70%
The implementation costs associated with e-learning are high	3	100.00%				
The operational costs associated with e-learning are high	1	33.30%	1	33.30%	1	33.30%
The training costs for lecturers in e-learning are prohibitive	1	33.30%			2	66.70%
e-Learning results in increased overall course costs for learners	2	66.70%	1	33.30%		
Technophobia among learners makes it difficult to move to e-learning	1	33.30%	1	33.30%	1	33.30%
Technophobia among lecturers makes it difficult to move to e-learning	1	33.30%			2	66.70%
Learners who do not have access to a computer are unable to join classes where e-learning is used	1	33.30%			2	66.70%

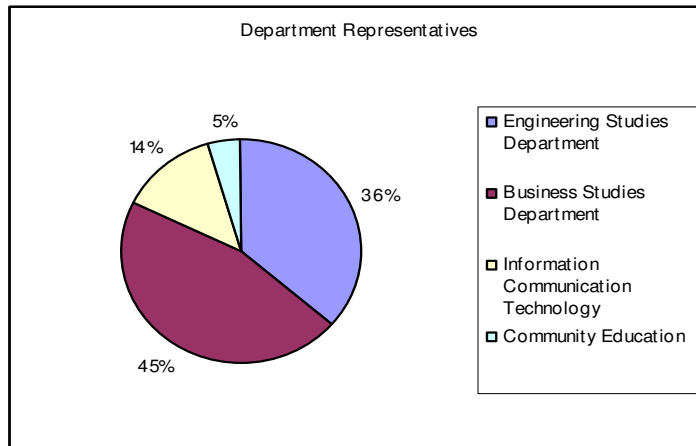
Source: Questionnaire A: Section B: Question 20

6.3 FINDINGS- QUESTIONNAIRE B

Q1 – Q2: Departmental representation

The sample consisted of all Heads of Departments from the FET Colleges under this study. In some instances representatives thereof completed the questionnaire. The findings as presented are based on 22 completed questionnaires out of a possible 33 from the original sample. **Figure 6.7** shows how the various departments are represented in the study. As mentioned in chapter 4, Engineering Studies and Business Studies are the dominant departments in FET Colleges. The results as shown in **figure 6.7** are therefore not surprising. It should be noted that the Information Communication Technology Departments is a fairly new department since the qualitative study was conducted in the year 2000 as explained in chapter 3.

Figure 6.7: Department representation



Source: Questionnaire B: Question 2

Q3: Student/Lecturer ratio

The student/lecturer ratio as confirmed by respondents falls between 20 to 40 learners per lecturer. The results confirm that FET Colleges have relatively small classes. **Table 6.10** shows that 20 of the 22 respondents share the same view with two respondent splitting to opposite extremes.

Table 6.10 Student/Lecturer Ratio

Student/Lecturer Ratio

Frequency	Respondents	Percentage
Less than 20:1	1	4.5
Greater than 20:1 but less than 40:1	20	90.9
Greater than 40:1	1	4.5

Source: Questionnaire B: Question 3

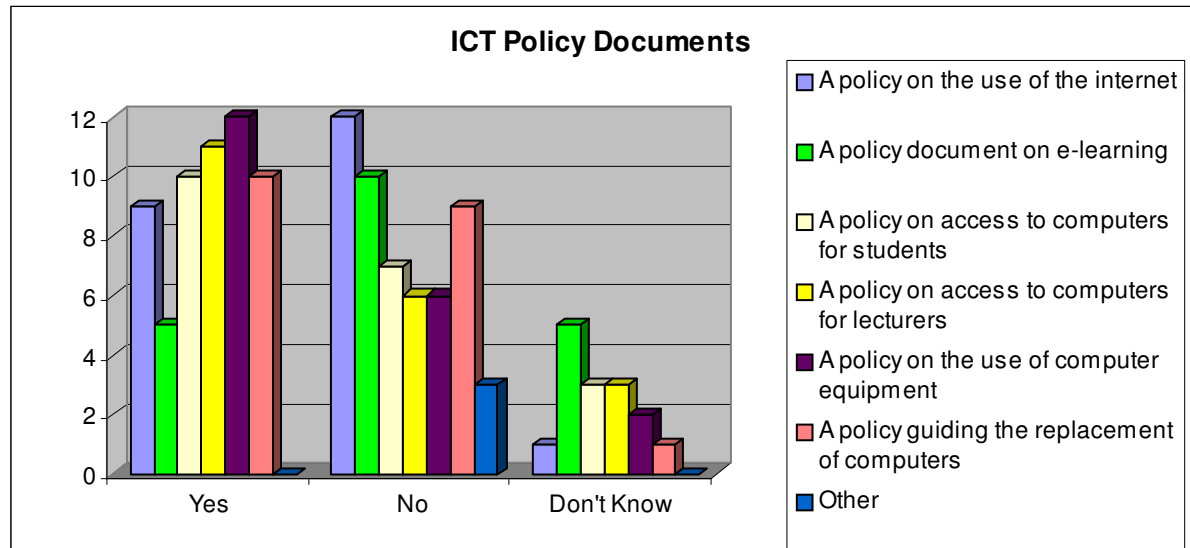
Q4 – Q7: Using of electronic devices, excluding calculators, to facilitate teaching and learning

Answers provided by respondents for Question 4 of questionnaire B revealed that Computers, Data Projectors and Overhead Projectors are the only commonly used electronic devices for learning. An odd response included a smart Board as one of the devices being utilised. It should be noted that this was an open-ended question and respondents could have come with an array of electronic devices such as DVDs, CDs and telephone conferencing just to give some examples. The answers provided depict non-utilisation of other available electronic devices.

The purpose of this question was to compare its findings with the findings of questions 13, 16 and 17 of the questionnaire. The findings are provided in question 17 as indicated later in this chapter.

Q7: Formal policy documents guiding the use of ICT resources

Figure 6.8 Formal ICT Policies (HOD response)



Source: Questionnaire B: Question 7

There is a narrow difference between the responses given by individuals on the availability and non-availability of policy documents guiding the use of ICT resources as shown in **figure 6.8**. However, the following observations are made:

There are more individuals who indicated the absence of the following policy documents as compared to the availability thereof:

- A policy on the use of the internet (54% said Yes and 40% said No).
- A policy on e-Learning (50% indicated Yes with a 25% split between No and Don't Know).

There is a strong “YES” answer, 60%, on the existence of a policy for the replacement of computers though 30% of the respondents indicated that there is no such a policy document at their institutions. It is worrisome that a “Don't Know” response was received in this study. This type proves poor communication in the FET College sector on policy matters.

Q8: Learner access to computers

Table 6.11 presents a general picture showing that there are computers in different departments dedicated for students use. As much as 16 out of 20 respondents indicated that there are computers for student use in various departments. Further more there are 5 responses confirming the availability of computers in the library and another 5 in computer laboratories. Access to computers for learners is basically confirmed by 21 of the 22 respondents. The availability of computers for student use is a positive step towards an e-Learning offensive.

Table 6.11 Learner's Access to Computers

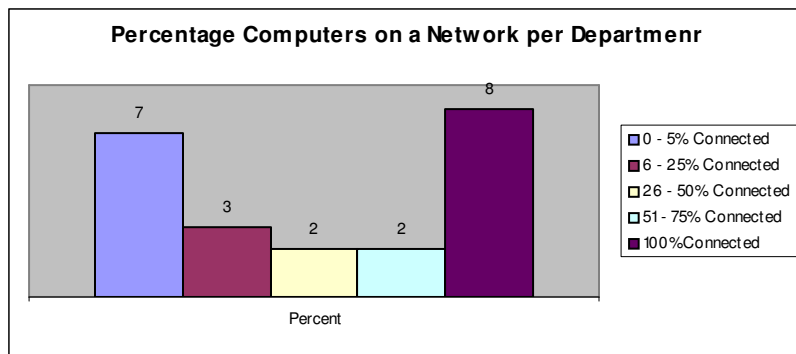
Learner's Access to Computers	
There are computers in the department dedicated for student use	16
There are computers available for all students in the library	5
There is a dedicated computer laboratory for all students	5
Learners use their own computers on campus	2
Other	1

Source: Questionnaire B: Questionnaire 8

Q9: Percentage of computers connected on a network

Of the 22 respondents 8 confirmed that 100% of computers in their departments are connected on a network -**figure 6.3**. Whilst on the extreme side 7 respondents indicated that between 0% and 5% of computers in their department are connected on a network. It seems as if answers lie at extremes, it is either all computers are connected or they are not connected on a network. This is important since network connections assist in sharing of information between users and can also facilitate e-Learning as was pointed out in the literature study earlier on.

Figure 6.9 Percentage computers on a network



Source: Questionnaire B: Question 9

Q10: Where computers are connected on a computer

Respondents whose computers are not all on a network provided the results as seen in **figure 6.9**. Computers are mostly connected on a network in administration and management offices. Classrooms that are on a network are mostly used for computer training. Administration offices and management offices seem to be given priority over the classrooms.

Table 6.12 Areas on a network

Frequency	Count	%
Administration offices	12	80.00%
Lecturer's offices	6	40.00%
Management's offices	8	53.30%
Internet café	2	13.30%
Computer laboratory	1	6.70%
Library	2	13.30%
Classrooms	3	20.00%
Other	1	6.70%

Source: Questionnaire B: Question 10

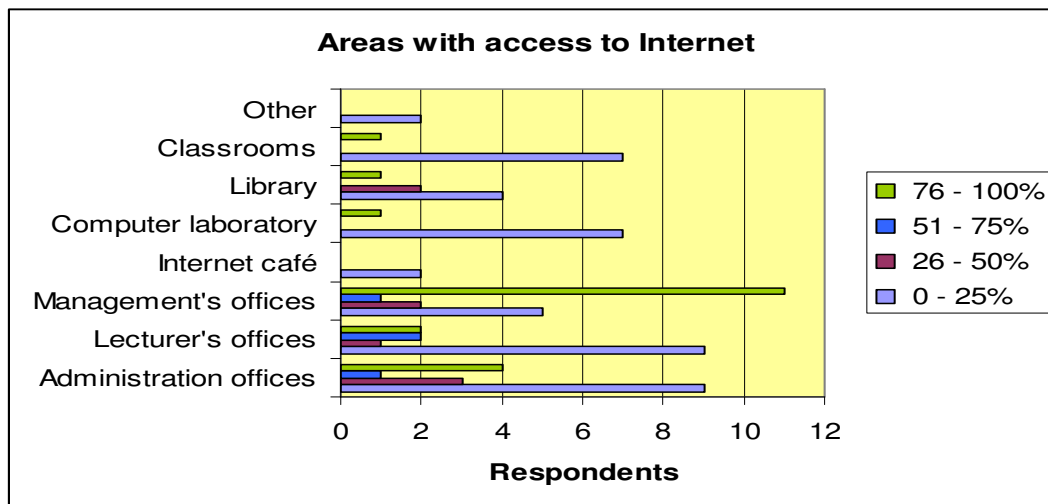
Q11: Learners registered per department

Most learners registered per department fall between 500 to 2000 (Head count)

Q12: Percentage of computers with Internet access per location/area

Online learning as another form of e-Learning is facilitated by connectivity to the Internet. As highlighted from the literature study computers used for online learning must be connected to the Internet.

Figure 6.10: Areas with access to the Internet



Source: Questionnaire B: Question 10

Figure 6.10 shows that most respondents indicated that computers that have access to the Internet are between 0% and 25% in most locations/areas within a college. For an example, 9 respondents pointed out that 0% - 25% of computers in lecturer's offices have access to the Internet as compared to only 2 respondents that confirmed that over 76% have access to the Internet.

Management offices seem to be an area where there is more access to Internet than other areas. The Internet in FET colleges is mostly used for administration and management. It has been indicated earlier by most respondents that all computers in management offices are connected on a network. The Internet is minimally used if not used at all to facilitate learning.

Q13: Integration of Information Communication Technology with the delivery of learning content

Learning is an integrated activity catering for various learning styles and needs. It is not surprising that the Internet is not an integral part of learning in the FET colleges. It has been indicated previously in this chapter that most computers that have access to the Internet are used for administration and management purposes, **figure 6.9**. Individuals who responded to question 13 indicate as seen in **table 6.13**, that the use or integration of technology into learning in FET Colleges ranges from some extent to no extent with relatively moderate to large extent responses.

Audio conferencing does not require sophisticated equipment – only speakers, microphone and a telephone line. However, 88% of the respondents indicate that audio conferencing is not used at all in FET Colleges. **Table 6.13**.

CD courseware can be made available to learners using stand-alone computers but 80% of the respondents indicate that stand-alone computers are not integrated at all in the delivery of learning.

Though 40% of respondents say Communication via e-mail is integrated to a large extent in the delivery of learning, it is not the overwhelming majority. The opinion on the integration of communication via e-mail is almost evenly spread among “No Extent”, “Some Extent” and Moderate Extent”. No conclusive decision that can thus be drawn.

Surfing of the Internet for learning is viewed by 40% and 45% of respondents as ranging from “No Extent” to “Some Extent” respectively. This indicates that integration of Websites into learning is minimal.

Table 6.13 Aspects integrated in the delivery of learning

	No Extent		Some Extent		Moderate Extent		Large Extent		Total	
Surfing of the internet	12	57.10%	7	33.30%	2	9.50%	0	0	21	100.00%
Specific websites	9	40.90%	10	45.50%	2	9.10%	1	4.50%	22	100.00%
Chat rooms	19	100.00%	0	0	0	0	0	0	19	100.00%
Audio conferencing	16	88.90%	0	0	1	5.60%	1	5.60%	18	100.00%
Video conferencing	16	84.20%	2	10.50%	0	0	1	5.30%	19	100.00%
Using a stand-alone courseware	14	82.40%	2	11.80%	1	5.90%	0	0	17	100.00%
Downloading material from the internet for local study later	8	36.40%	9	40.90%	4	18.20%	1	4.50%	22	100.00%
Communicating by e-mail	5	22.70%	4	18.20%	4	18.20%	9	40.90%	22	100.00%
Learning management system	11	61.10%	0	0	3	16.70%	4	22.20%	18	100.00%

Source: Questionnaire B: Question 11

Q14: How FET colleges understand the concept, “e- Learning”?

The literature study in Chapter 2 explained in detail what e-Learning is all about and what it entails. Responses to question 14 of questionnaire B provided the following answers transcribed without any alteration.

“It is distance learning via the Internet”

“Where you do a course on computer by using the Internet”

“All tasks, questionnaires and tests are done on the computer”

“That you can look into a web site you can get information from”

“Electronic learning – learning through electronic media”

“Learning through the media of an electronic device”

“Communication via outlook and Internet”

“Studying via the Internet –submitting projects”

“Use of Internet as resource of learning”

"All learning-taking place via the Internet"

"Learners access learning material electronically using computer at anytime and from anywhere in the world"

"No knowledge"

"Learners are learning through self-experiencing"

"Learning at your own pace & time"

"Learning through email and Internet, where assignment can be access and send through this system"

"Use technology in teaching"

"Using electronics for assisting learning"

"To study with the aid of Internet"

"To surf the net to study"

"To do all assignments on –line and off load learning material"

"Is where student can receive tutorials through an Internet, communicate with lectures and post and receive answers"

"Learning through electronic means open learning. Computer based learning log in/out with institution for more information"

It makes an interesting reading and discovery. Most respondents consider the use of the Internet as forming an integral part of e-Learning. The responses in bold are considered to be more inclusive and in line with the theory in Chapter 2. More inclusive answers are in black and bold.

Q15: The most preferred way of writing e-Learning in FET Colleges

Table 6.14 How to write e-Learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	E-learning	1	4.5	4.8	4.8
	e-Learning	5	22.7	23.8	28.6
	E-Learning	5	22.7	23.8	52.4
	e-learning	9	40.9	42.9	95.2
	Other	1	4.5	4.8	100
	Total	21	95.5	100	
Missing	System	1	4.5		
Total responses		22	100		

Source: Questionnaire B: Question 15

Table 6.5 above shows the most preferred way of writing e-Learning in FET Colleges. 42% of respondents prefer to write it as **e-Learning**

Q16: Competence of learners in the skills required for e-Learning

Table 6.11 shows that 16 out of 22 respondents confirm the availability of computers for learners dedicated for learning in various departments. **Table 6.15** shows how HODs rate the competence of learners on a scale of “Totally Incompetent” to “Very Competent”. The respondents are of the view that learners are partly to very competent in basic word processing and spread sheet and incompetent to totally incompetent in other skills as listed in **Table 6.15**. Some of the reasons for incompetence could include unavailability of Internet access within the Colleges for learners as well as socio economic factors. It has been reported in chapter 4 that only 5.4% of South Africans have access to Internet.

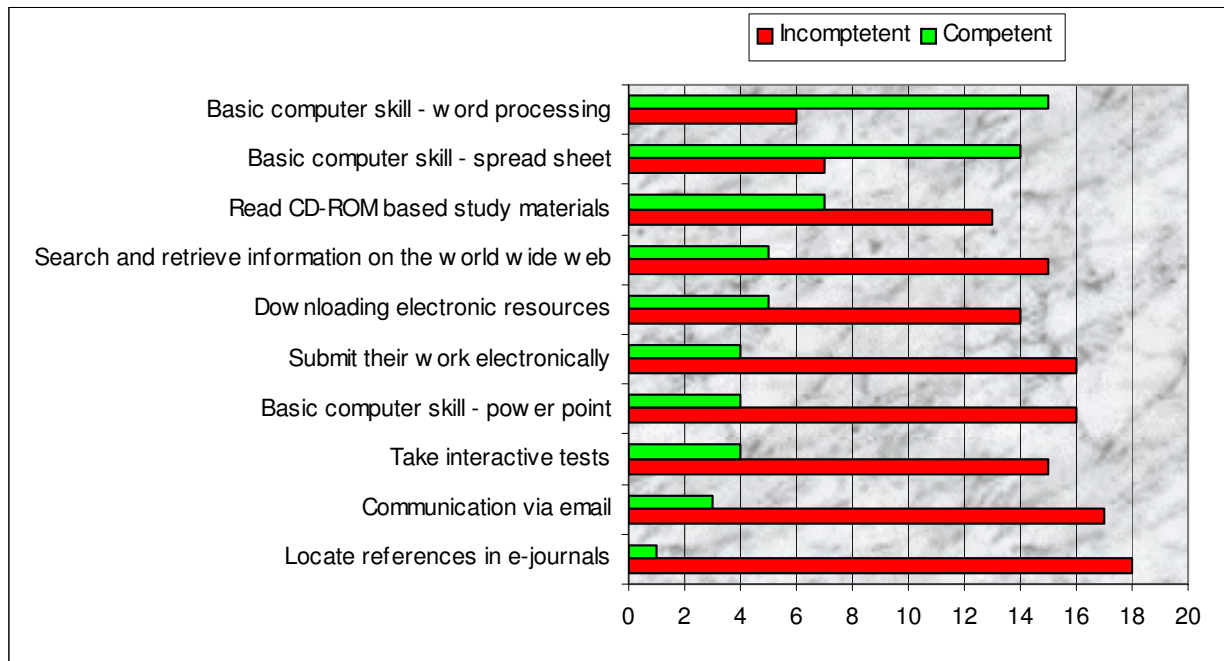
Table 6.15 Learner competence

	Totally Incompetent		Incompetent		Partly competent		Very Competent		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Basic computer skill - word processing	2	9.50%	4	19.00%	8	38.10%	7	33.30%	21	100.00%
Basic computer skill - spread sheet	4	19.00%	3	14.30%	8	38.10%	6	28.60%	21	100.00%
Basic computer skill - power point	7	35.00%	9	45.00%	3	15.00%	1	5.00%	20	100.00%
Communication via email	9	45.00%	8	40.00%	3	15.00%	0	0	20	100.00%
Search and retrieve information on the world wide web	6	30.00%	9	45.00%	5	25.00%	0	0	20	100.00%
Locate references in e-journals	13	68.40%	5	26.30%	1	5.30%	0	0	19	100.00%
Downloading electronic resources	11	57.90%	3	15.80%	4	21.10%	1	5.30%	19	100.00%
Read CD-ROM based study materials	4	20.00%	9	45.00%	6	30.00%	1	5.00%	20	100.00%
Take interactive tests	4	21.10%	11	57.90%	3	15.80%	1	5.30%	19	100.00%
Submit their work electronically	7	35.00%	9	45.00%	3	15.00%	1	5.00%	20	100.00%

Source: Questionnaire B: Question 16

Figure 6.11 shows a glaring picture when the Likert scale used in **table 6.15** is combined and reduced to either “Competent” or “Not Competent” responses. The lack of competence becomes obvious. Learner’s competence determines if the very learners are ready to can cope with e-Learning requirements.

Figure 6.11: Learner Competency



Source: Questionnaire B: Question 16

Q17: Peers/lecturers competence in the skills required for e-Learning

Table 6.15 indicates that it lectures at FET colleges are partly competent in critical skills required for e-learning. Communication via e-mail is a dominant skill of competence. Preparing of CD and DVD study material is rooted between totally incompetent to incompetent. In general the majority of respondents indicate a partly competent response.

Table 6.16: Peers/lecturer Competence

	Totally Incompetent		Incompetent		Partly competent		Very Competent		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Basic computer skill - Ms Access	0	0	4	19.00%	13	61.90%	4	19.00%	21	100.00%
Basic computer skill - word processing	1	4.80%	1	4.80%	11	52.40%	8	38.10%	21	100.00%
Basic computer skill - spread sheet	1	4.80%	2	9.50%	12	57.10%	6	28.60%	21	100.00%
Basic computer skill - power point	0	0	8	38.10%	12	57.10%	1	4.80%	21	100.00%
Communication via email	0	0	2	9.50%	8	38.10%	11	52.40%	21	100.00%
Search and retrieve information on the world wide web	0	0	4	19.00%	14	66.70%	3	14.30%	21	100.00%
Locate references in bibliographic systems and e-journals	2	10.00%	8	40.00%	10	50.00%	0	0	20	100.00%
Download and print electronic resources	2	10.00%	4	20.00%	11	55.00%	3	15.00%	20	100.00%
Prepare online CD-ROM based study materials	8	38.10%	6	28.60%	6	28.60%	1	4.80%	21	100.00%
Prepare online DVD-based study materials	7	33.30%	9	42.90%	4	19.00%	1	4.80%	21	100.00%

Source: Questionnaire B: Question 16

6.4 CONCLUSION

In this chapter the results of the empirical study were presented. The findings of questionnaire A were discussed followed by those of questionnaire B. Graphs and tables were used to clarify the findings. Comparisons of the common finding between the two questionnaires were made where applicable.

The next chapter provides conclusions and recommendation of the study and possible further research.

CHAPTER 7

CONCLUSSIONS AND RECOMMENDATIONS

7.1 INTRODUCTION

This chapter focuses on the drawn conclusions from the study. The conclusions are in line with the set objectives in chapter 1. The achievements of the objectives are presented with recommendations for future study.

7.2 ACHIEVEMENT OF THE OBJECTIVES

7.2.1 Primary Objective

The primary objective of this study was to evaluate the utilisation of e-Learning in Public Further Education and Training Colleges with a view of using the findings of the study as a guiding document to assist FET Colleges on how to implement e-Learning as a mode of learning delivery.

The use of Information Communication Technology as an e-Learning platform for the provision of education was investigated as part of the primary objectives.

The findings **Table 6.6, Table 6.13 and Figure 6.5** show that public FET Colleges minimally use ICT for the provision of education and training but mostly for administration and management. When it comes to e-Learning, in general terms, e-Learning is a little known phenomenon in the public Further Education and Training sector. From the findings it is concluded that public FET colleges do not use e-Learning as a mode of learning delivery. FET Colleges are still rooted to the conventional mode of teaching and learning.

The literature study in Chapter 2 and 3 plus information from Chapter 4 – Challenges and Opportunities facing FET Colleges - can be used as guide for the implementation of e-Learning in public FET Colleges.

There are a number of factors that are at play reported in the conclusions drawn from the outcome of the findings that relate to the secondary objectives below.

7.2.2 Secondary Objectives

This study comprised of eight secondary objectives from which the following conclusions are drawn and some recommendations made.

7.2.2.1 Conclusion on understanding of e-Learning

In investigating how FET Colleges understand the concept, e-Learning, the literature study in Chapter 2 was used as a reference. Research findings showed that respondents do comprehend the concept e-Learning well in general terms. The definitions provided by respondents as illustrated in Chapter 6, 6.3 do conform to the definitions from the literature study in Chapter 2.

7.2.2.2 Conclusion on the availability of resources

In looking at resources required for e-Learning a number of respondents indicated that resources are available for e-Learning in public FET Colleges. **Figure 6.2** shows the number of available computers per Colleges. All Colleges under the study have a network connection, telephone line and access to the Internet.

The conclusion that is drawn is that though the necessary resources are available, the resources are not used for learning but to facilitate management and administration of the College.

7.2.2.3 Conclusion on the use of ICT for learning

All colleges do have websites. The websites are not interactive and contribute minimal in facilitating learning interventions. Both lecturers and students can not perform any academic related activity on the College's website, **Table 6.4**. Use of the Internet and intranet and other ICT tools - **Table 6.5, Figure 6.5 and Table 6.13** - does not integrate the delivery of learning.

Table 6.6 confirms minimal utilisation of ICT for learning in FET Colleges. It is concluded that FET Colleges do not optimally use available infrastructure and resources for e-Learning.

7.2.2.4 Conclusion on the readiness for e-Learning

Whether FET Colleges are ready or not to can gradually blend conventional methods of teaching with e-learning (blended learning) depends on the availability of the skills and competency required for e-Learning from lecturers and students. From the findings in **Tables 6.15, 6.16** and **figure 6.11** it is concluded that the respondents are not confident with the competence level of their peers to move to e-Learning. It is further concluded that learners do not possess the required skills to operate in an e-Learning environment. Jolliffe, Ritter and Stevens (2001:278) warn against using instructors that are not competent in using the Web as a tool to deliver learning. Such instructors will not be able to support learners.

7.2.2.5 Conclusion on management support for e-Learning

Senior managers in any organisation are tasked to driving the strategic intent of that organisation by putting the right policies in place. According to the research findings senior management indicate that the implementation of e-Learning is under discussion at strategic level within the public FET Colleges, all respondents confirmed that there are no e-Learning policy documents at the time of this study (**Figure 6.1**) which is contrary to the contents of **Table 6.9** where respondents disagree that College management does not support e-Learning as a mode of learning delivery. It is concluded that senior management of public FET Colleges do not support e-Learning. Respondents as in **Table 6.2** are of the view that senior managers have minimal skills required in dealing with change in terms of new learning methods.

7.2.2.6 Conclusion on Government support

The literature study in Chapter 4 clearly indicated the fact that the National Department of Education does have policies in place that seek to support FET Colleges in the use of ICT for the delivery of education. The White paper on e-Education is just but one piece of legislation.

7.3 RECOMMENDATIONS FOR FUTURE RESEARCH

It is strongly recommended that a similar National study be conducted so that inference can be made on the state of e-Learning in FET Colleges. The study should include a broader sample. For an example, all personnel at FET can be interviewed on why public FET Colleges are not using e-Learning. The type of information necessary from such a study would require the use of a qualitative research methodology. In order to get the required information in-depth interviewing and focus group activities are recommended.

Public Further Education and Training Colleges do not optimally use the available websites. The websites are not interactive. The users of the websites like students may not be computer literate or the Colleges may not have the expertise to can manage an interactive website. Access to the Internet by lecturers and student is very limited. It is recommended that an in-depth study be conducted to determine the level of computer literacy in the public FET College sector.

Another area to be looked at is Information Communication Technology curriculum development versus availability of infrastructure and human resources and how FET Colleges can use e-Learning to service employed learners. It is recommended that a study be conducted on how public FET Colleges services employed learners through the use of e-Learning and introduction of new curricular.

7.4 CONCLUSION

The research took a snap shot on the use of e-learning in public FET Colleges. Conclusions and recommendations have been presented in this chapter. The primary and secondary objectives of this study have been achieved. It is therefore deduced that the results add value to the body of knowledge pertaining to the use of technology to facilitate learning in FET Colleges

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APPENDIX

APPENDIX 1

QUESTIONNAIRE A

SECTION A: POLICY QUESTIONS

e-Learning is defined as a Web-enabled system that makes knowledge accessible to who need it, when they need it, anytime and anywhere.

1. What is your institutions understanding of the concept e-Learning?

2. In your opinion, to what extent does each of the following support Information Communication Technology development trends at your College?

NE – no extent; SE – some extent; ME – moderate extent **and** LE – large extent

	NE	SE	ME	LE
The Vision of the College				
The Mission of the College				
The Objectives of the College				
Student Representative Bodies				
College policy documents				

3. Does your college have any of the following policy documents guiding the use of ICT resources?

Policy document	Yes	No
A policy on the use of the Internet		
A policy document on e-learning		
A policy on access to computers for students		
A policy on access to computers for lecturers		
A policy on the use of computer equipment		
A policy guiding the replacement of computers		
Other (specify)		

4. In your view what are the three most important policy documents that may assist in the implementation of e-learning in the college – irrespective of whether the policy is in place?

5. In your opinion, to what extent do managers responsible for the college posses the necessary skills to deal with each of the following?

NE – no extent; SE – some extent; ME – moderate extent and LE – large extent

SKILL	NE	SE	ME	LE
To effectively deal with staff resistance to change in terms of learning delivery medium				
To effectively deal with students resistance to change in terms of teaching and learning medium				
To effectively communicate change to employees at all levels				
To effectively communicate change to students				
To effectively deal with staff expectations as far as learning methods are concerned				
To effectively deal with students expectations as far as learning methods are concerned				
To effectively adapt to change in education				

policy documents from the National Education Department				
To Foster teamwork among staff				

SECTION B: INFORMATION TECHNOLOGY RESOURCES

1. Do you have a dedicated Information Technology (IT) Department responsible for the delivery of learning content?

Yes	
No	

2. If yes in (1), how many employees are in the IT Department?

3. If no in (1) under which department does it operate?

4. How many computers dedicated for training and development does the college have in total – all campuses, including those used by lecturing personnel?

Less than 500		1
500 - 600		2
601 - 1000		3
More than 1000		4

5. What percentage of computers at the college is connected on a network?

0 - 5%	
6 – 25%	
26 – 50%	
51 – 75%	
76 - 99%	
100%	

6. If your answer is NOT 100% in (5), indicate areas where computers are on a network.

Administration offices	
Lecturers' offices	
Management's offices	
Internet café	
Computer laboratory	
Library	
Classrooms	
Other (specify).....	

7. How many learners (head count) are currently registered in the college?

Less than 5000	
5000 - 7000	
7001- 10000	
More than 10000	

8. What percentage of computers has access to the Internet in the college as per the following locations?

Location/ Computer at	Percentage			
	0 – 25%	26 – 50%	51 – 75%	76 – 100%
Head Office				
Campus A				
Campus B				
Campus C				
Campus D				
Campus E				
Campus F				

9. How does the College access or connect to the Internet at the following locations?

Location/ Computer at	Connection method to internet					
	ISDN	DIGINET	Dial up	ADSL	Wireless	Other
Head Office						
Campus A						
Campus B						
Campus C						
Campus D						
Campus E						
Campus F						

10. To what extent does the College use the Internet for each of the following functions?

NE – no extent; SE – some extent; ME – moderate extent **and** LE – large extent

USE OF INTERNET	NE	SE	ME	LE
To deliver learning content				
For Research and development				
For Electronic funds transfer				
Dissemination of information to staff				
Dissemination of information to students				
Dissemination of information to the public				
Other (specify).....				

11. Does the college have a website?

Yes		1
No		2

(If NO proceed to question 14)

12. Provide the college's website address

13. To what extent can learners perform the following functions online through the college's Website?

NE – to no extent; SE – to some extent; ME – moderate extent and LE – large extent

Online function	NE	SE	ME	LE
Register courses online				
Update personal information online				
Access financial records online				
Access academic records online				
Access learning content				
Download assignments				
Pose questions and comments to the lecturer				
Access the college's library catalogue				
Other (specify).....				

14. Does the college have an Intranet?

Yes	
No	

15. To what extent can each of the following functions be performed through the college's intranet?

NE – to no extent; SE – to some extent; ME – moderate extent and LE – large extent

Intranet function	NE	SE	ME	LE
Learners can register courses				
Learners can update their personal information				
Learners can access their financial records				
Learners can access their academic records				
Learners can access learning content				
Learners can download assignments				
Learners can pose questions to the lecturer				
Learners can access the college's library catalogue				
Campuses can share administrative information				
Information can be transferred from campus to campus				
Other (specify).....				

16. To what extent does the college use each of the following communication methods to communicate information to the learners?

NE – to no extent; SE – to some extent; ME – moderate extent **and** LE – large extent

Method of communication	NE	SE	ME	LE
Post (Snail mail)				
e-mail				
SMS (Short message system) via cellphone				
SMS (Short message system) via other 3 rd part software				
Internal news bulletin				
Mass gathering/Student assembly				
Notice boards				
Other (specify)				

17. To what extent does the college use each of the following electronic media for the delivery of teaching and learning?

TNE – to no extent; SE – to some extent; ME – moderate extent and LE – large extent

Electronic medium	NE	SE	ME	LE
Overhead projector				
Data Projector				
Television				
Video machine				
DVD player				
CD Rom				
Mobile phone				
Portal (please specify) eg WebCT				
Other (please specify).....				

18. To what extent do you agree with the following statements?

SA – Strongly Agree, A – Agree, N – Neutral, DA – Disagree, SD – Strongly Disagree

Statement	SA	A	N	DA	SD
My college unnecessarily purchases computer equipment					
Computer equipment purchased by my colleges is underutilised					
Computer equipment available at my college is obsolete.					

19. To what extent do you agree or disagree with each of the following statements regarding e-Learning?

SA– Strongly agree, A– Agree, N– Neutral, D – Disagree, SD – Strongly disagree

e-LEARNING, in comparison with conventional methods of learning delivery	S A	A	N	DA	S D
reduces training time					
reduces training costs					
results in higher content retention by learners					
is flexible (learners can learn anytime, anywhere and at their own pace)					
keeps learning material consistent					
makes it easy to update learning material					
provides a fear-free environment for learners					
has high start-up costs					
material is difficult to maintain due to the lack of ownership of Web site					
cannot be extended to those students who are not computer literate					

20. To what extent do you agree with the following statements?

SA– Strongly agree, A– Agree, N– Neutral, D – Disagree, SD – Strongly disagree

Statement	S A	A	N	DA	S D
FET Colleges do not have the appropriate infrastructure to embark on e-learning as a method of learning content delivery					
There is insufficient number of lecturers with the necessary expertise to use e-learning					
The caliber of learners at my college will not cope with e-Learning requirements					
College management does not support the use of e-Learning as a mode of content delivery					
e-Learning is a little known phenomenon in the Public FET Sector					
There is insufficient support for e-Learning from the Gauteng Department of Education					
The mission of the college does not support the use of e-Learning in the provision of training					
The FET sector is not geared for the e-Learning type of learning content delivery					
The implementation costs associated with e-Learning are high					
The operational costs associated with e-Learning are high					

The training costs for lecturers in e-Learning are prohibitive					
e-Learning results in increased overall course costs for learners					
<i>Technophobia</i> (fear of the use of computers) among learners makes it difficult to move to e-Learning					
<i>Technophobia</i> (fear of the use of computers) among lecturers makes it difficult to move to e-Learning					
Learners who do not have access to a computer are unable to join classes where e-Learning is used					

APPENDIX 2

QUESTIONNAIRE B

Please answer the questionnaire by putting a crossing in the appropriate box/s next to your answer or by providing an answer in the space provided.

1. What is your position at the Campus?

2. Which department/school/faculty do you represent?

3. What is the student/lecturer ratio in your department?

Less than 20:1	<input type="checkbox"/>
Greater than 20:1 but less than 40:1	<input type="checkbox"/>
Greater than 40:1	<input type="checkbox"/>

4. Do lecturers in your department use electronic devices, excluding calculators, to facilitate teaching and learning?

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>

5. If yes in (4) kindly list such devices

6. If no in (4) provide reason/s why electronic devices are not used to facilitate teaching and learning

7. Are there formal policy documents at your college guiding the use ICT resources?

	Yes	No	Do not know
A policy on the use of the Internet			
A policy document on e-learning			
A policy on access to computers for students			
A policy on access to computers for lecturers			
A policy on the use of computer equipment			
A policy guiding the replacement of computers			
Other (specify)			

8. How do learners access computers in your department?

(Mark all applicable)

There are computers in the department dedicated for student use	
There are computers available for all students in the library	
There is a dedicated computer laboratory for all students	
Learners have use their own computers in the Campus	
Other (please specify)	

9. What percentage of computers in your Department is connected on a network?

0 - 5%	
6 – 25%	
26 – 50%	
51 – 75%	
76 - 99%	
100%	

10. If your answer is NOT 100% in (5), indicate areas where computers are on a network.

Administration offices	
Lecturers' offices	
Management's offices	
Internet café	
Computer laboratory	
Library	
Classrooms	
Other (specify).....	

11. How many learners (head count) are currently registered in your department?

Less than 500	
500 - 1000	
1001- 2000	
More than 2000	

12. What percentage of computers has access to the Internet in your Department?

Location/ Computer in	Percentage			
	0 – 25%	26 – 50%	51 – 75%	76 – 100%
Administration offices				
Lecturers' offices				
Management's offices				
Internet café				
Computer laboratory				
Library				
Classrooms				
Other (specify).....				

13. To what extent are the following integrated in the delivery of learning content in your department?

NE – no extent; SE – some extent; ME – moderate extent **and** LE – large extent

	NE	SE	ME	LE
Surfing of the Internet (real time)				
Specific Websites				
Chat rooms				
Audio conferencing				
Video conferencing				
Using a stand-alone courseware				
Downloading material from the Internet for local study later				
Communication by e-mail				
Learning Management System (WebCT; Blackboard; etc)				

14. What is your understanding of the concept e-learning?

15. There is no agreement on how to write e-Learning. Which of the following do you consider to be the most appropriate?

E-learning	
e-Learning	
E-Learning	
e-learning	
Other	

16. Indicate your own view on the competence of learners in your department in the following skills

TI- Totally incompetent, I – incompetent, PC – Partly competent, VC – Very Competent

SKILL	TI	I	PC	VC
Basic computer skill – word processing				
Basic computer skill – spread sheet				
Basic computer skill – power point				
Communication via email				
Search and retrieve information on the world wide web				
Locate references in e-journals				
Download electronic resources, e.g. notes and presentations				
Read CD-ROM based study materials				
Take interactive (formative) tests				
Submit their work electronically				

17. Indicate your view on the degree of competence of your peers/lecturers at the college in the following skills.

TI- Totally incompetent, I – incompetent, PC – Partly competent, VC – Very Competent

SKILL	TI	I	PC	VC
Basic computer skills – Ms Access				
Basic computer skill – word processing				
Basic computer skill – spread sheet				
Basic computer skill – power point				
Communicate via email				
Search and retrieve information on the world wide web				
Locate references in bibliographic systems and e-journals				
Download and print electronic resources, e.g. notes and presentations				
Prepare online CD-ROM based study materials				
Prepare online DVD- based study materials				

Thank you for your participation.

Write any comments

APPENDIX 3

LETTER OF PERMISSION



PO Box 20005
Dawn Park
1474

The Principal

I am conducting research on the implementation of e-Learning in the Public Further Education and Training Colleges in Gauteng. This is the topic of my empirical study in compliance with the requirements of the Business Administration Masters degree at the University of Johannesburg. The participation of your College is essential to establish the extent to which Public FET Colleges are utilising or not utilising e-Learning in the provision of education and training. Your participation will assist in formulating a guiding document for FET Colleges in future.

There research comprises the completion of two questionnaires; Questionnaire A and Questionnaire B. Questionnaire A needs to be completed, during a personal interview, by a senior strategic member of staff based at Head Office/Central Administration responsible for delivery of learning using Information Communication Technology. The interview will take approximately an hour. Questionnaire B is a self-report questionnaire that needs to be completed by all Head of Departments (HODs), based at campuses. It will take about 20 minutes to complete. Your cooperation is paramount to the success of this investigation.

Permission to conduct this research has been sought and duly granted by The Gauteng Department of Education. (see attached letter).

To facilitate implementation, I hereby request that you provide me with the names of the relevant persons so that I could confirm dates for completion of the questionnaires. I propose any date during the week starting 22 May 2006.

Kindly use the phone number, fax number or e-mail address to supply me with the names of the relevant people.

Cellphone: 082 901 2924

Fax number: 0866322067

e-mail: tsolorp@mweb.co.za

Respondents are assured that their answers will be treated as confidential and will only be used in a summarized format.

I will collect the completed questionnaires or they may be faxed to 0866322067 or e-mailed to tsolorp@mweb.co.za.

Any queries may be addressed to the above fax number, e-mail address or Mr. HB Klopper my study supervisor at 011 489 3031, e-mail hbk@rau.ac.za.

Thank you for your participation and input.

Regards

Ramodise Phillip Tsolo
Researcher