#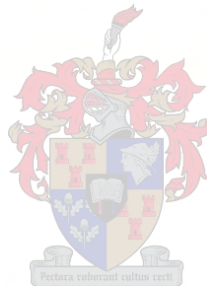 THE APPLICABILITY OF INTERNATIONAL BENCHMARKS TO AN INTERNET-BASED DISTANCE EDUCATION PROGRAMME AT THE UNIVERSITY OF STELLENBOSCH

NICOLINE HERMAN

THESIS SUBMITTED IN PARTIAL FULFILMENT

OF THE REQUIREMENTS

FOR THE DEGREE OF

MPHIL IN EDUCATION (HIGHER EDUCATION)

AT THE UNIVERSITY OF STELLENBOSCH

STUDY LEADER: PROF. E.M. BITZER   MARCH 2001

DECLARATION

I, THE UNDERSIGNED, HEREBY DECLARE THAT THE WORK CONTAINED IN THIS THESIS IS MY OWN ORIGINAL WORK AND HAS NOT PREVIOUSLY IN ITS ENTIRETY OR IN PART BEEN SUBMITTED AT ANY UNIVERSITY FOR A DEGREE.

SUMMARY

The publication of the Report of the National Commission on Higher Education (NCHE) in 1996, the White Paper on Higher Education (1997) and the Size and Shape Report (2000) has profoundly changed the landscape of Higher Education in South Africa. Institutions of Higher Education have to re-think, among others, their teaching and learning strategies including the integration and use of technology. Although the use of technology in higher education is still in the early stages, the use of Information and Communication Technologies (ICTs) is growing rapidly.

The University of Stellenbosch started to integrate the Internet in their teaching in 1998. Research was undertaken to find a suitable on-line course management system and Web Course Tools (WebCT) was chosen for this purpose. Since it was implemented, the use of WebCT has grown exponentially, although in most cases only as an add-on to classroom lectures. The World Health Organisation (WHO) Mental Health Disorders in Primary Care programme was the first programme developed as a full distance education course, delivered completely by means of WebCT and making use of the team approach to programme development. This programme was therefore chosen as the case study for this research.

The purpose of this study is to apply 24 internationally developed benchmarks for quality on-line distance education to the WebCT component of the WHO programme in order to determine the applicability of these benchmarks for World Wide Web (WWW) programmes at the University of Stellenbosch.

The research strategy for this study is a qualitative case study. Qualitative data was obtained by conducting semi-structured interviews with the individuals involved in the design, development and implementation of the WHO course. The study concludes that the 24 benchmarks cannot be applied to the current University of Stellenbosch context. The systems at the US will either have to be adapted, or established to meet the requirements of the international benchmarks. Another option for the US could be to develop their own benchmarks, taking international guidelines into account.

OPSOMMING

Die publikasie van die Nasionale Kommissie vir Hoër Onderwys se verslag in 1996, die Witskrif vir Hoër Onderwys 1997 en die onlangse *"Size and Shape"* Verslag, het die scenario vir Hoër Onderwys in Suid-Afrika onherroeplik verander. Hoër Onderwys instellings is besig om, onder andere, die strategieë wat leer en onderrig bevorder, in heroorweging te neem en dit sluit die integrasie of gebruik van tegnologie as een van die belangrikste punte in. Alhoewel die gebruik van tegnologie in Suid-Afrika nog in 'n beginstadium is, groei die gebruik hiervan ongekend.

Die Universiteit van Stellenbosch het sedert 1998 begin om die Internet in leer en onderrig te benut. Navorsing is gedoen oor 'n geskikte elektroniese kursusbestuurstelsel en die keuse het op *"Web Course Tools (WebCT)"* geval. Sedert die implementering hiervan het die gebruik eksponensiële groei beleef. In die meeste gevalle word WebCT bykomend tot klaskameronderrig gebruik. *Die "World Health Organisation (WHO) Mental Health Disorders in Primary Care"* programme was een van die eerste, volledige afstandsonderwysprogramme wat van die spanbenadering tot programontwikkeling gebruik gemaak het. Die program is daarom ook as gevallestudie vir hierdie navorsing gekies.

Die doel van hierdie navorsing is om 24 internasionale kriteria vir kwaliteit Internet afstandsonderrig, toe te pas op die WebCT komponent van die bogenoemde WHO kursus, ten einde te bepaal of die kriteria toepaslik is vir Internetkursusse binne die Universiteit van Stellenbosch konteks.

Die navorsingstrategie wat aangewend is om die doel van hierdie navorsing te bereik, is 'n kwalitatiewe gevallestudie. Kwalitatiewe data is verkry deur semi-gestruktureerde onderhoude met die persone te voer wat betrokke was by die ontwerp, ontwikkeling en implementering van die WHO program. Die afleidings wat deur hierdie studie gemaak word, is dat die 24 kriteria nie toepaslik is vir die huidige Universiteit van Stellenbosch konteks nie. Die US sal dus die huidige sisteme moet verander of sisteme vestig ten einde aan internasionale standaarde te voldoen. 'n Ander opsie sou wees om 'n eie stel kriteria, gebaseer op die internasionale kriteria, te ontwikkel.

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- The interviewees for their willingness to partake.

TABLE OF CONTENT

LIST OF ACRONYMS AND ABBREVIATIONS

DDE	:	The Division of Distance Education at the US
HUMARGA	:	Computer users area for staff and students in the Humanities
IT	:	Information Technology Department at the US
ICD 10	:	International Classification of Diseases Version 10
ICTs	:	Information and Communication Technologies
SAIDE	:	South African Institute for Distance Education
Uni-Ed	:	The division of University Education at the US
US	:	University of Stellenbosch
WebCT	:	Web Course Tools. A course management system implemented by the University of Stellenbosch
WHO	:	World Health Organisation
WHO Programme	:	WHO Mental Health Disorders in Primary Care programme
WWW	:	The World Wide Web

LIST OF TABLES

x

LIST OF FIGURES

Chapter 1

BACKGROUND, CONTEXTUALISATION AND PROBLEM STATEMENT

"Global trends in higher education point to significant changes taking place. The gradual shift is caused by numerous factors such as rapidly improving technology, an increase in population numbers and socio-economic factors. The Internet has brought global information dissemination to the doorstep, introducing the concept of distributed learning and free access to knowledge. This, combined with the fact that large industries and businesses are starting to provide their own accredited electronic training programmes, poses a major threat to higher education institutions. In order to remain competitive and to find innovative ways of providing quality education without building brick and mortar, many higher education institutions are establishing virtual learning environments and virtual campuses" (Rossman, 1993:7).

1.1 BACKGROUND AND CONTEXTUALISATION OF THE STUDY

1.1.1 The South African context

The publication of the Report of the National Commission on Higher Education (NCHE) in 1996, the White Paper on Higher Education (1997) and the Size and Shape Report (2000), have brought changes for Higher Education in South Africa. Institutions of Higher Education have to re-think, amongst others, their teaching and learning strategies. The integration and/or use of technology should be included in this re-thinking process. For the purposes of this study, the focus will be on the use of technology in teaching and the assessment of the quality of such teaching.

The use of information and communication technologies (ICTs) is emphasised in all the above documents. In the Size and Shape document of 30 June 2000 (2000:18), it is stated as follows:

"One particular challenge that will require explicit attention by all Higher Education providers is the development of information and communication technologies. The rapid growth and convergence in functionality of these technologies over the last few years is

being harnessed by a growing number of higher education systems and organisations around the world. Information and communication technology is allowing for exponential increases in the transfer of data through increasingly globalised communication systems. Information and communication technology networks have significantly expanded the potential for organisations to expand their sphere of operations and influence beyond their geographical boundaries. It is expanding the range of options available to education planners with respect to teaching and learning strategies, design and combinations, and administering and managing education."

According to the South African Institute for Distance Education (SAIDE), the long term impact of ICTs on Higher Education will only become clear in the future. However, they identify the following emerging trends: (SAIDE, 2000:ii)

- ICTs allow for exponential increases in the transfer of data through increasingly globalised communication systems.

- ICT networks have significantly increased the potential for organisations to expand their sphere of operations and influence beyond their traditional geographical boundaries.

- ICTs expand the range of options available to education planners in terms of the teaching and learning strategies they choose to use.

- ICTs tend to accentuate social disparities between rich and poor.

- ICTs reduce barriers to entry of potential competitors to higher education institutions.

1.1.2   The University of Stellenbosch (US)

The US Strategic Framework includes general strategic decisions about teaching and learning to which the institution has already committed itself. According to this document the University sees its duty towards the development of teaching and learning as follows: (Strategic Framework, 2000:12)

The University of Stellenbosch is characterised by quality teaching, the ongoing renewal of teaching programmes and the creation of effective learning and studying opportunities.

According to the Institutional Plan (1999:5) the Distance Education Division of the University of Stellenbosch strives to place high-quality tertiary education within the reach

of the geographically dispersed population of South Africa. Core values and behavioural norms such as high-quality academic programmes, integrity of service delivery and learner-friendliness are among the key concepts on which distance education at the US is based. Different modes of distance education are provided for, including the Internet and interactive television broadcasts alongside paper-based programmes.

In the Strategic Framework of the US (2000:12), the University identifies, among others, the following specific priorities for teaching and learning:

- Restructuring the teaching portfolio into more coherent and well-focused programmes;

- Fostering a student-centred learning ethos;

- Innovative facilitation of learning through technology;

- Establishment of University-wide ownership of all renewal actions;

- Adjusting the structures of the organisation to support the programme approach; and

- Reinforcing the systems of decentralised management and safeguarding short decision making processes in support of better teaching and learning.

During 1999, the US constituted a Task Group for Learning and Teaching (TGLT) to emphasise its commitment towards the abovementioned priorities. A senior member of each faculty as well as a student representative was appointed as members of the TGLT. The chairperson of the task group is the Deputy Vice Chancellor (Teaching). The task group has the following brief from Senate: (Institutional Plan, 1999:2)

- To develop an institutional strategy for teaching and learning at the US for 2000 - 2002 (or 2000 to 2004);

- To develop a teaching and learning strategy for each faculty; and

- To play a key role in the implementation of these strategies.

One of the workgroups of the TGLT is an E-learning and E-teaching workgroup. This workgroup is doing an in-depth investigation into the issue of E-learning and E-teaching at the University of Stellenbosch. This workgroup formulated their task as follows: (E-learning and E-Teaching Workgroup interim report, 2000: no page numbers)

- Determining the performance areas for E-learning and E-teaching;

- Creating an open framework for E-learning and E-teaching; and

- Alignment of all role players.

The Deputy Vice Chancellor (Teaching) also chairs an E-Campus Forum which includes the other Deputy Vice Chancellors and senior staff. All these committees and groups are working towards an E-Campus strategy for the University.

1.1.3   Web Course Tools (WebCT)

During 1998, the Universities of Potchefstroom, Pretoria and Stellenbosch consolidated their initiatives in finding a suitable Web-based teaching/learning management system. Three systems were evaluated, using an instrument which the evaluation team designed (See Annexure A). The final choice came to be Web Course Tools (WebCT) (Lazenby, 1998:20).

WebCT was developed in 1995 at the University of British Columbia. The company amalgamated with Universal Learning Technologies (ULT), and the new company adopted the WebCT name. By July 2000 the company statistics boasted:

- more than 6.7 million student accounts,

- in 147 000 programmes,

- at more than 1 480 colleges and universities,

- in 57 countries (WebCT Homepage found on 27 October 2000 on the WWW on [http://www.about.webct.com]).

Since WebCT was launched at the US in 1998, it has experienced rapid growth. During the first 18 months the number of student users grew from zero to almost 5000 (See Annexure B). Since these statistics became available in April 2000, a number of new programmes and student users have been registered. One of these new programmes is a

distance education programme of the Department of Family Medicine, called the World Health Organisation (WHO) Mental Health Disorders in Primary Care[1] programme. This programme was developed during 1999 and 2000 and is used as the case study for this research.

1.2   PROBLEM STATEMENT AND JUSTIFICATION

1.2.1   Rationale for the study

As stated above, WebCT has experienced rapid growth since it was launched at the US in 1998. Until now, technical training and support as well as instructional design advice was provided to educators involved in the design, development and implementation of on-line programmes. To ensure that students and educators get maximum benefit from the technology, it is important to focus on the design of quality on-line modules. It is therefore a high priority to put criteria in place for determining the quality of on-line programmes at the US.

1.2.2   Purpose of the study

The purpose of this study is to apply 24 internationally developed benchmarks for quality on-line distance education (Annexure C) to a post graduate distance education (WebCT) programme in medical education, in order to determine the applicability of these benchmarks for the design, development and implementation of World Wide Web (WWW) programmes at the University of Stellenbosch.

1.2.3   Value of the research

The Division for University Education (Uni-Ed) at the University of Stellenbosch, (of which the researcher is a member) is responsible for quality standards of teaching materials. Currently no formal criteria for on-line programmes are in place at the institution. This study aims at determining the applicability of international criteria to this specific environment.

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[1] The World Health Organisation Mental Health Disorders in Primary Care programme is a distance education programme for General Practitioners presented by the Department of Family Medicine at

1.2.4   Research question

According to Mouton (1996:65) all research starts when some phenomenon prompts the researcher to ask a question that requires an answer. The question which the researcher wants to ask and needs to answer, is the following:

Will the 24 Benchmarks for success in Internet-Based Distance Education be applicable for the assessment of the design, development and implementation of WWW programmes at the University of Stellenbosch, when applied to the particular programme?

1.2.5   Critical questions/Research objectives

In order to answer the research question, the following critical questions[2] need to be answered:

- What criteria are used for quality on-line education internationally?

- Can these criteria be applied to a post graduate distance education (WebCT) programme in medical education at the University of Stellenbosch?

- To what extent should the criteria be revised for the University of Stellenbosch context?

1.2.6   Delimitations

Because this study has a specific focus and is conducted within a particular environment, it is important to state the following delimitations:

- The 24 benchmarks for success in internet-based distance education as published by the Institute for Higher Education Policy (USA) is the unit of analysis for this study.

- This study uses the World Health Organisation (WHO) Mental Health Disorders in Primary Care programme as the case for analysis.

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the University of Stellenbosch. The course is Internet-based and presented via WebCT. This course is the case study used for this study and is discussed in Chapter 3.

[2] These questions also serve as research objectives for this study.

- This study will focus on a post graduate Distance Education (WebCT) programme at the University of Stellenbosch.

1.2.7 Research strategy

The research strategy for this study will be discussed in Chapter 3 and the following paragraph only serves as a brief orientation.

The research strategy for this study is a qualitative case study. This strategy was chosen because " *[T]he interest is in process rather than outcomes, in context rather than a specific variable, in discovery rather than confirmation. Such insights into aspects of educational practice can have a direct influence on policy, practice and future research"* (Merriam: 1988:xii). The aim of qualitative research is not verification of a predetermined idea, but discovery that leads to new insights (Sherman & Webb, 1990:5).

For the purpose of this study, as stated in paragraph 1.2.2 of this chapter, the case study as research strategy seems to be the most suitable choice. The WHO Mental Health Disorders in Primary Care programme is used as case study to determine the applicability of the 24 benchmarks for the US environment.

1.2.8 Theoretical grounding of the research

According to Fourie (1996:246), the qualitative and quantitative paradigms are both used in educational research. However, " *[G]rowing numbers of educational researchers are turning away from the traditional positivistic approach underlying the quantitative paradigm, and are increasingly accepting and using an ethnographic research design incorporating phenomenological or qualitative concepts and techniques."*

The case study as research strategy finds its roots in the qualitative paradigm of research. Specific characteristics of the qualitative paradigm, which also apply to case studies, will be noted in the following paragraphs.

Hutchinson (in Sherman & Webb, 1990:7) gives the following criteria for qualitative research:

- focus on context;

- " *lived* " experience;

- patterns of experience; and

- judging or appraising.

Sherman and Webb (1990:7) point out that the aim of judging and appraising is to know or understand better.

Crowson (1987) in Fourie (1996:248) states that qualitative research, as applied in higher education studies, is based on four principles:

- The objective of the research is to *understand*, rather than to prove, predict or control.

- Understanding develops most easily if the researcher him/herself is the main instrument of data gathering.

- In analysing the data, there is an emphasis on analytic induction, i.e. building an understanding upwards from the ground.

- It is recognised that the search for understanding is heavily value-laden.

According to Merriam (1988:21), qualitative case studies are particularistic because they focus on a specific phenomenon, they are descriptive because they give a thick description of the phenomenon, and they are heuristic because they offer insights into the phenomenon under study. Due to the fact that the case study approach draws from the qualitative paradigm of research, it is inductive and focuses on process, understanding and interpretation.

1.2.9   Data generating techniques

The following data generating techniques was used in this study:

- a study of relevant documents and literature;

- applying the 24 benchmarks to the WHO programme;

- interviewing persons involved in the design, development and implementation of the programme.

These interviews were semi-structured and based on the 24 benchmarks (Annexure C). Merriam (1988:74) explains that *"In the semi-structured interview, certain information is desired from all the respondents. These interviews are guided by a list of questions ... but neither the exact wording nor the order of the questions is determined ahead of time"*. According to Cohen and Manion (in Nduna, 2000:90) *"...semi-structured interviews are less formal, the interviewer is free to modify the sequence of questions, change wording, explain questions and add to the questions; the interviewer can also probe for more specific answers to clarify and eradicate any misunderstanding."*

1.2.10 Strategies to promote research validity and reliability

Fourie (1996:249) stated that it is crucial to apply quality control measures to give any research credibility. Reliability and validity are important to all research (Bless & Higson-Smith, 1995:139). According to Mouton (1996:28), validity means *"the best approximation to the truth"* in other words *"the accuracy of research findings"* (Goetz & LeCompte in Fourie, 1996:249). According to Stake (in Denzin & Lincoln, 1994:241) most case study researchers are concerned about the validity of their communications. Reliability is concerned with the consistency of measures (Bless & Higson-Smith, 1995:130).

According to Fourie (1996:250), qualitative researchers can employ a variety of techniques and methods to enhance the credibility of their research. Crowson (in Fourie, 1996:251) states that using multiple data gathering strategies enables the researcher to provide sufficient scope and depth in reporting, to enable the reader to understand and separately interpret the study's findings. This strategy is called triangulation and can be employed to reduce the likelihood of misinterpretation.

To promote the research validity of this study, the researcher applied the following strategies:

- Semi-structured interviews with the different individuals who were involved in the design, development and implementation of the WHO programme (triangulation).

- A thick description of the unit of analysis.

- Participant feedback from the actual participants/interviewees to cross-check the researcher's interpretation and conclusions.

- Peer review with other people/colleagues to cross-check the researcher's interpretation and conclusions.

- Critical self-reflection by the researcher on potential biases and predispositions.

1.2.11 The unit of analysis

According to Mouton (1996:91), the unit of analysis is the phenomenon to which the researcher's conclusions ought to apply. For this study, the unit of analysis was the 24 Benchmarks for success in Internet-based Distance Education as published by the Institute for Higher Education Policy in the United States of America in April 2000 (See Annexure C). The unit of analysis will be described fully in chapter 3 of this study.

1.2.12 Description of key terminology

For the purpose of this study, the following functional terminology will be used:

Applicability	In the Concise Oxford Dictionary (1990) applicability is defined as *"have relevance, appropriate, make use of as relevant or suitable"*. For the purpose of this study the functional definition of applicability will be appropriateness and suitability.
Benchmarks	The Concise Oxford Dictionary (1990) defines a benchmark as a standard or point of reference. A standard, however, is defined as an object or quality or measure serving as a basis or example or principle to which others conform or should conform or by which the accuracy or quality of others is judged (ibid). The functional definition for the purpose of this study would *be "establishing the required achievement levels"* (Department of Education: 1997: xiv).
24 Benchmarks	24 Benchmarks for success in Internet-based Distance Education as published by the Institute for Higher Education Policy in the United States of America in April 2000.
Bounded System	Merriam (1988:9) defines a bounded system as a specific phenomenon, such as a programme, an event, a person, a process, an institution or a social group which is examined

as case study. Denscombe (1998:37) explains that the case needs to be a self-contained entity with distinct boundaries.

Case study	A qualitative case study is an intensive, holistic description and analysis of a single entity or phenomenon (Merriam: 1988:16).
Criteria	A principle or standard that something is judged by (Concise Oxford Dictionary: 1990). As Greyling (1993:45) states, an absolute definition for *criteria* is seldom found in the literature. The goal of criteria is to give a basis for decisionmaking *re* effectiveness and efficiency. Criteria can in short be defined as characteristics according to which quality is judged.
Distance Education	Planned learning that normally occurs in a different place from teaching and as a result requires special techniques of programme design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organisational and administrative arrangements (Moore & Kearsley, 1996:2).
Internet	The global computer network that interconnects all other networks using a common telecommunications protocol (Moore & Kearsley, 1996:262).
Internet-based programme	A programme that is delivered via the Internet.
On-line education	Any form of education (teaching/learning) that takes place via computer networks which could be local or global (Moore & Kearsley, 1996:262).
Quality	The degree of excellence of something (Concise Oxford Dictionary: 1990). The White Paper on Higher Education (1997) defines quality as *"...maintaining and applying academic and educational standards, both in the sense of specific expectations and requirements that should be complied with and in the sense of ideals of excellence that*

should be aimed at. These expectations and ideals can differ from context to context, partly depending on the specific purposes pursued. Applying the principle of quality entails evaluating services and products against set standards, with a view to improvement, renewal or progress."

Semi-structured Interview	In the semi-structured interview, certain information is desired from all the respondents. These interviews are guided by a list of questions *"…but neither the exact wording nor the order of the questions is determined ahead of time"* (Merriam, 1988:74).
Thick description	A term from anthropology that means the complete, literal description of the incident or entity being investigated (Merriam, 1988:11).
WebCT	Web Course Tools. A course management system for the WWW.
WHO programme	The World Health Organisation Mental Health Disorders in Primary Care programme which is used as the case study for this research.
World Wide Web	Abbreviated WWW. A hypermedia capability on the Internet (Moore & Kearsley, 1996:263).

1.3   SUMMARY

In this chapter, the background, contextualisation and problem statement of this study were discussed. The South African and University of Stellenbosch contexts were described to orientate the reader towards the milieu of the study. In the following chapter the theoretical framework of the study will be discussed.

Chapter 2

LITERATURE REVIEW

If we can't bring the people to the university, why not take the university to the people!
James Sewell (1850) in Oosthuizen (1997:83)

2.1 INTRODUCTION

More than a century passed since James Sewell made the remark cited above. During this time, universities, society, knowledge, education and technology changed and developed dramatically. More recently, Bates (1995:17) made the comment that technology provides the opportunity to teach differently in a way that meets the fundamental needs of a new and rapidly changing society. There is evidence that technology can both improve the quality of education and enable new target groups to be reached at a lower cost than the conventional methods. He further commented that to succeed in this, lecturers should implement new teaching and learning approaches which exploit the unique features of the new technologies to meet the needs of all types of learners. These new approaches should be based on the ways in which people learn and on the design of effective learning environments. The strengths and weaknesses of the different technologies should also be kept in mind.

In this comment, Bates addresses the following issues which serve as the theoretical foundation of this study and will be discussed in this chapter:

- Quality in higher education;

- New approaches to teaching and learning;

- On-line teaching and learning in higher education; and

- Different needs of learners.

2.2   QUALITY IN HIGHER EDUCATION

In Bates's (1995:17) comment he mentions that "... *technology can ... improve the quality of education...*", but the big questions in the researcher's mind is firstly, how do we develop quality on-line programmes which are supposed to improve the quality of education and secondly, what then is quality?

In chapter one of this study quality is defined as "*...maintaining and applying academic and educational standards, both in the sense of specific expectations and requirements that should be complied with and in the sense of ideals of excellence that should be aimed at. These expectations and ideals can differ from context to context, partly depending on the specific purposes pursued. Applying the principle of quality entails assessing services and products against set standards, with a view to improvement, renewal or progress*" (White Paper on Higher Education found on 1 December 2000 on the WWW on [http:www.polity.org.za/govdocs/white_papers/educwp3.html]).

Bramucci, Junn and Reisman (2000:1) state that "*[T]oo many on-line programmes are 'page-turners' with poor pedagogy, but how do you get busy professors to learn and use better instructional design?*" Bates (1995:12) adds to this that "*[G]ood teaching may overcome a poor choice in the use of technology, but technology will never save bad teaching; usually it makes it worse.*" It thus seems clear that the design, development and delivery of quality teaching to ensure quality learning in higher education is not negotiable. To ensure quality materials, ongoing assessment of these materials is crucial.

2.2.1   Assessment

According to Moore and Kearsley (1996:182), quality assessment is one of the most important administrative functions of an organisation. Administrators are responsible for measuring quality and taking action to improve it. Indicators for assessing quality can include number and quality of applications and enrolments, student achievement, student satisfaction, academic staff satisfaction, programme or institutional reputation and last but not least, quality of programme materials.

Rowntree (1990:333) defines assessment as the process of getting various people's reactions to a programme with a view to improving it. He discusses three types of assessment which could be carried out:

- Critical commenting - people read through the draft programme materials and give their comments;

- Developmental testing including face-to-face and field trials - students are used to try out the material and give their feedback; and

- Continuous monitoring - while the material is presented, it is kept under review to monitor possible weaknesses.

It thus seems important to plan an overall assessment strategy for any programme right from the start. All elements of the programme should be assessed, but a key element in quality assessment is whether the materials match the stated outcomes and reflect appropriate learning strategies for the students and subject matter involved. It is generally deemed an institution's responsibility to have policies and procedures in place for periodical review of instructional materials.

2.2.2 Institutional support

Whenever an institution decides to go the on-line distance education route, the mission, policies and procedures of such an institution might need to be adapted or changed, because being a provider of quality distance education in the higher education sector implies certain responsibilities.

The establishment of organisational and administrative infrastructure to ensure that on-line distance education programmes can be efficiently and effectively developed, managed, executed and assessed seems to be very important for quality in distance education. Therefore, assessment of these systems to determine their successes and failures should be inherent in such a system.

When an institution decides to implement on-line distance education it is important to keep the following warning from the South African Institute for Distance Education (SAIDE) (2000:23) in mind: *"Thinking about ICTs to support teaching and learning is a false starting point, as it assumes effective underlying systems."* Ragan, (2000) proposes that the overall support system should address the following areas: technical support for both academic staff and students, instructional resources, academic staff development, instructional design and development, and policy changes aimed at creating an environment conducive to distance education. According to Ragan (2000) support services should be designed to provide continuous (a seven days a week, twenty four

hours per day) service. SAIDE (2000:iii) further adds that the effective use of ICTs in teaching and learning flows much more easily if institutions have *already* integrated the effective use of ICTs into their management and internal communication systems. Without this basis, the use of ICTs to support delivery of education to learners will always be unsustainable.

Distance education programmes should employ creative solutions to fulfil the needs of distance education individuals: interaction among academic staff, students, and peers beyond direct instruction, access to advising and academic support services and resources, and socialisation in the field of study (Ragan, 2000). The institution has a responsibility towards the establishment of systems to address these needs.

2.3   NEW APPROACHES TO TEACHING AND LEARNING

When looking at new approaches to teaching and learning the concepts of learning and teaching should be explicated. Howe (1999:2) defines learning as a variety of mental events which help people to extend their capacities. Bigge (1982:1) sees learning as *"...an enduring change in a living individual that is not heralded by his genetic inheritance. It may be considered a change in insights, behaviour, perception, or motivation, or a combination of these; learning always refers to some systematic change in behaviour or behavioural disposition that occurs as a consequence of experience in some specified situation"*. Vygotsky (1978) describes learning as a movement from the interpsychological plane (between or among individuals) to the intrapsychological plane (within the individual). Teaching is defined by Gagne, Briggs and Wager (1992:3) as *"...a set of events that affect learners in such a way that learning is facilitated."* Keegan (1993:240) states education is the transmission of selected elements *"...to be internally carried and used..."* by learners. Holmberg (1999:32) adds that learning is an active process in which the learner interprets information and tries to connect it with already existing knowledge and to fit it into existing cognitive structures. Meaningful learning therefore implies anchoring new learning matter in cognitive structures already acquired. Student-centred learning is defined as learning where students and their learning are the most important elements. Students need to take responsibility for their own learning and should be actively involved in their learning.

When students learn they vary their approach: they either adopt a deep or a surface approach towards learning, (Holmberg, 1999:34) depending on their own understanding of what learning is. A deep approach to learning is characterised by students' attempts to

make sense of what is to be learned. This involves thinking, seeking integration between components and between tasks and playing with ideas (Gibbs, 1992:2). A surface approach on the other hand is focused on memorisation and reproduction (ibid). Quality student learning always has to aim at stimulating a deep approach towards learning. What factors could then be implemented by educators to encourage a deep approach? Gibbs (1992:10) lists the following key elements associated with a deep approach:

- Intrinsic student motivation - when a student experiences a need to know something;

- Students need to be actively involved;

- Interaction with other fellow students; and

- Making use of a student's existing knowledge base.

Gibbs (1992:1) defines quality student learning as *"...the development of students' intellectual and imaginative powers; their understanding and judgement; their problem-solving skills; their ability to communicate; their ability to see relationships within what they have learned and to perceive their field of study in a broader perspective. The programme should aim to stimulate an enquiring, analytical and creative approach, encouraging independent judgement and critical self-awareness."*

The above paragraphs relate to student-centred learning. How then can programmes be designed to promote this active involvement and personal responsibility by students? Shin (1998:39-42) gives the following guidelines:

- Embed strategy training and the teaching of metacognitive strategies;

- Encourage feelings of self-efficiency through modelling;

- Promote student's' feeling of ownership through cognitive apprenticeship;

- Promote students' mastery orientation through provision of feedback; and

- Promote self-reflection by encouraging students' use of self-regulation activities such as planning, analysing, monitoring and revising.

Trilling and Hood (1999:1) expand on the issue of student-centred learning when stating that we are currently in the Knowledge Age as opposed to the Industrial Age. In the Industrial Age the focus was on manufacturing and products, while in the Knowledge Age

the focus is on information and knowledge. To ensure quality student learning, educators should be aware of these different foci.

To demonstrate what learning in the Knowledge Age looks like Trilling and Hood (ibid) contrast it to learning in the Industrial Age in Table 2.3 that follows[3].

TABLE 2.3 :

LEARNING IN THE INDUSTRIAL AGE VS LEARNING IN THE KNOWLEDGE AGE

Industrial Age	Knowledge Age
Teacher as director	Teacher as facilitator, guide and consultant
Teacher as knowledge source	Teacher as co-learner
Curriculum-directed learning	Student-directed learning
Time-slotted, rigidly scheduled learning	Open, flexible, on-demand learning
Primarily fact-based	Project and problem based
Theoretical, abstract, principles and surveys	Real-world, concrete. Actions and reflections
Drill and practice	Inquiry and design
Rules and procedures	Discovery and invention
Competitive	Collaborative
Classroom-focused	Community-focused
Prescribed results	Open-ended results
Conform to norm	Creative diversity
Computers-as-subject-for-study	Computers-as-tool-for-learning
Static media presentations	Dynamic Multimedia interactions
Classroom-bounded communication	World wide unbounded communication

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[3] It should be noted that contrasts or dichotomies like this are for purposes of understanding rather than reflecting reality.

Industrial Age	Knowledge Age
Test-assessed by norms	Performance assessed by experts, mentors, peers and self

Trilling and Hood (1999:11)

From the elements in Table 2.3, the difference between the Industrial and the Knowledge Ages is clear. Teaching in the *"old paradigm"* of the Industrial Age was clearly more focused on the educator and his/her knowledge and capabilities: the approach was more rigid, and classroom activities were performed in lock-step, while focusing on memorising and encouraging a surface approach to learning. Teaching in the *"new paradigm"* of the Knowledge Age is more student-centred, flexible, creative, uses the student's experience and context and encourages deep learning.

Laurillard (in Bates,1995:56) adds to this explanation of teaching, that university teaching needs to be:

- *Discursive*: teaching needs to be conversational, in the sense that an environment should be created where student and teacher can communicate agreed goals and conceptions to each other, and generate and receive feedback;

- *Interactive*: the student should take actions to demonstrate learning, and the teacher should respond to those actions, by providing feedback;

- *Adaptive*: the teacher should use information about the student's understanding of concepts to determine appropriate future learning activities for the student; and

- *Reflective*: the teacher needs to encourage students to reflect on the feedback in relation to the instructional goals.

When analysing the above information, certain elements necessary for quality student learning are mentioned repeatedly. When looking closer at these elements, it seems as if a constructivist approach, incorporating collaborative and/or co-operative learning principles, serves as a possible departure point to address the requirements for quality student-centred learning.

2.3.1   What is constructivist learning?

Constructivist learning is based on students' active participation in problem-solving and critical thinking regarding a learning activity which they find relevant and engaging. They are *"constructing"* their own knowledge by testing ideas and approaches based on their prior knowledge and experience, applying these to a new situation, and integrating the new   knowledge   gained   with   pre-existing   intellectual   constructs ([http://curriculum.calstatela.edu/faculty/psparks/theorists/ 501const.htm]).

The roots of social constructivism can be found in the theories of Vygotsky (1978). The social constructivists see knowledge and therefore learning as constructed by interactions of individuals within society. Learning is therefore the result of the internalisation of social interaction. These interactions usually take place between the learner, the educator and the content.   According to Anderson and Garrison (Campbell Gibson, 1998:98), educational communication should facilitate the construction and negotiation of meaning. They further add that educational communication should be explanatory and should have an interactive component. Figure 2.3.1 illustrates the relationships between these three elements.
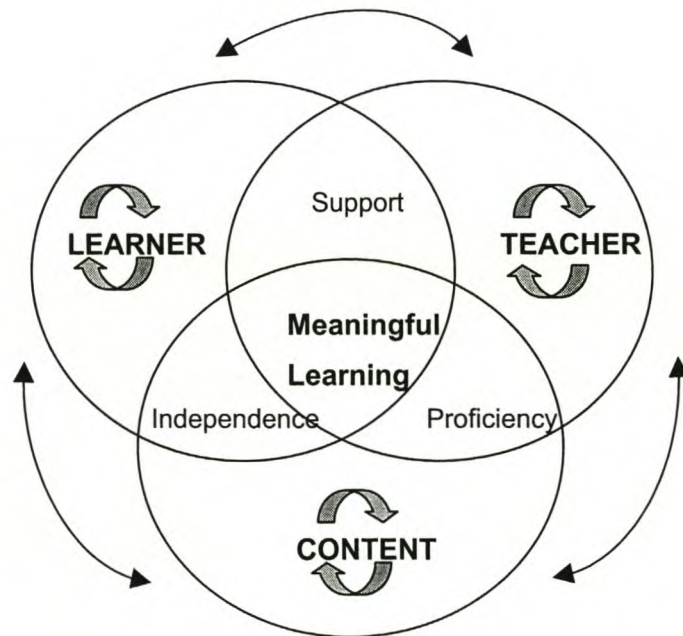
FIGURE 2.3.1 :

RELATIONSHIPS IN LEARNING

(Anderson & Garrison in Campbell Gibson, 1998:99)

Jonassen and McAleese (2000:3) add the following about teaching and learning in higher education: Firstly, they believe that the goal of universities should be to produce reflective practitioners. Reflection is a metacognitive strategy which can be enhanced by the use of technology. Computers can provide a conversational environment in which the learners can apply knowledge to problems and consider their actions as re-usable events. Learners can control their learning, learn from others and develop reflection in action and reflection on actions as metacognitive skills. Secondly, they believe that constructivistic learning environments are most effective for an advanced knowledge acquisition stage of learning. This stage is required consistently in universities. Therefore, universities are among the most appropriate venues for implementing constructivist learning.

2.3.2   Principles of Constructivism

A postgraduate student at the University of Pretoria made the following synthesis on the principles of constructivism, while studying for her Magister Degree in Educational Technology ([http:hagar.up.ac.za/catts/learner/lindavr/lindapg1.htm]):

- Emphasises learning and not teaching;

- Encourages and accepts learner autonomy and initiative;

- Sees learners as creatures of will and purpose;

- Thinks of learning as a process;

- Encourages learner inquiry;

- Acknowledges the critical role of experience in learning;

- Nurtures learners' natural curiosity;

- Takes the learners' mental model into account;

- Emphasises performance and understanding when assessing learning;

- Bases itself on the principles of the cognitive theory;

- Makes extensive use of cognitive terminology such as predict, create and analyse;

- Considers how the student learns;

- Encourages learners to engage in dialogue with other students and the teacher;

- Supports co-operative learning;

- Involves learners in real world situations;

- Emphasises the context in which learning takes place;

- Considers the beliefs and attitudes of the learner; and

- Provides learners with the opportunity to construct new knowledge and understanding from authentic experience.

The above list above serves as a comprehensive summary of the principles of constructivism and underlines the characteristics of learning in the Knowledge Age as discussed in paragraph 2.3. From the summary it also becomes clear why this approach is recommended for implementing student-centred learning, active learning, critical thinking and collaborative and/or co-operative learning.

2.3.3   Collaborative and co-operative learning

When learners interact with each other, with the educator, with the programme content and with other ideas, new information is acquired, interpreted and made meaningful (Ragan: 2000). According to Turoff (in Pantel, 1997:29) *"[C]ollaborative learning is a learning process that emphasises active participation within groups of learners and the teacher(s). Learners develop their knowledge while sharing ideas, reflecting and interacting in learning groups."* According to Figure 2.3.3 (Bitzer, 1999:12) that follows on the next page, collaborative and co-operative learning have so much in common that the researcher wants to propose that the same definition can also be applied to co-operative learning.

Similarities
• Learning actively is more effective than passive learning.
• The educator is a facilitator of learning, rather than a transmittor of information.
• Facilitator and students share equally in the learning and teaching experience.
• Both modes of learning develop higher-order thinking skills.
• Responsibility for learning is accepted by the individual student as well as the group in which the student finds him/herself.
• Articulating ideas in a small group enhances a student's ability to reflect on his/her assumptions and thinking processes.
• Developing social and team skills is a fundamental aspect of critical learning outcomes.
• Student success and retention of learned material are enhanced by a supportive small-group learning environment.
• Both modes of learning acknowledge the value of diversity and of harnessing it in the learning process.

Differences	
Co-operative learning	**Collaborative learning**
• Is usually pre-structured;	• Is usually loosely structured;
• Involves the demarcation of authority by facilitators;	• Leaves authority entirely to the group;
• Requires learners to be trained to function properly;	• Provides only broad guidelines to learners;
• Achieves outputs through task completion;	• Achieves outputs mainly through extensive projects;
• Has the potential to benefit all learners.	• Could benefit relatively sophisticated learners only.

FIGURE 2.3.3 :

SIMILARITIES AND DIFFERENCES BETWEEN CO-OPERATIVE AND COLLABORATIVE LEARNING (Bitzer, 1999:12)

Burge and Roberts (1998:25) state that when learning opportunities are constructed where students are helped to learn with and from each other, the result as a whole can be greater than the sum of its parts.

The challenge for distance educators is to design interactions to ensure that students feel part of a community of learners. Effective learning environments should involve interactions between the students, the students and the educator and the programme material. Social interaction should also be encouraged and supported. When students feel part of such a community they are more likely to be motivated to seek solutions to their problems and to succeed. Interaction should however not only be included because it is available on and supported by the WWW, it should be included to enhance student learning (Gilbert & Moore, 1998).

On the part of the educator, collaborative and/or co-operative learning requires thorough preparation and management of learning. Burge and Roberts (1998:25), further summarise the following advantages of this type of learning:

- Group discussions allow learners to

    - Summarise,

    - Explain,

    - Elaborate on information, which helps encode into long-term memory,

    - Seek feedback and

    - Strengthen what is known.

- Learners develop creative and divergent thinking styles.

- Learners temporarily suspend the expression of their own opinions while listening to others.

- Learners monitor and regulate each other's thinking.

- Peer expectations can increase motivation to come to class prepared.

- Peers can obtain and provide process feedback.

Constructivists make use of collaborative and/or co-operative learning techniques because learners are exposed to many opinions and interpretations. Shaw (in Pantel, 1997:30) comments that much of the value of collaborative and/or co-operative learning environments is due to the different knowledge constructions that each participant brings to the interactions.

Constructivist and collaborative and/or co-operative learning are some of the most important principles of on-line learning and teaching in higher education. This statement can be supported by the following quote from Jonassen and McAleese (2000:4):

"Modern information technology can and should support advanced knowledge acquisition. It can best do that by providing environments and thinking tools that engage constructivistic conceptions of learning. Technology-based learning environments should fulfil an information or knowledge construction need of the learner."

2.4 ON-LINE TEACHING AND LEARNING IN HIGHER EDUCATION

2.4.1 The World Wide Web (WWW)

The first version of the WWW was tested in December 1990 after a decade of development by Tim Berners-Lee and his colleagues in Geneva, Switserland (Crossman in Khan, 1997:19). Crossman further states that the WWW provides information *"...in any medium, on any subject, in any order, at any time and in any place"*. Since the WWW was first released on the Internet in 1991, extraordinary growth took place in the educational arena.

According to Starr (1997:8), there are three characteristics that give the WWW its educational value. These are as follows:

- Hypertext provides the simplest form of user interaction.

- Graphical browsers enable the delivery of multimedia on the Web.

- True interactivity goes beyond static Web pages and page linking and creates truly interactive pages with information exchange between the user and the server.

Flowing from this, Turoff (2000:1) and Merisotis and Phipps (1999:13) made the statement that there would be no distinction between the student who wants to attend face-to-face

lectures (traditional classroom-based instruction) and the student who wishes to engage in the same programme via modern technology (distance learning). Although this could be the case for the students, there appears to be a difference for the educator presenting these programmes (See Paragraph 2.4.5).

All the above characteristics probably need to be incorporated to present the learners with quality study material. Trilling and Hood (1999:16) state that for technology to support learning in the Knowledge Age it should focus on information content, learning challenges and learning support.

These factors indicate that designing materials for the WWW asks the same and more from the educator as when designing residential programmes.

2.4.2   Programme design and development

Although emerging technologies show much promises, sound instructional design still needs to be the focus of programme designers. On-line documents may save time and paper, but they are no substitute for materials that have been designed specifically to provide instruction in an on-line environment (Bramucci, *et al*, 2000).

When designing programme materials Gagne, *et al*, (1992:21-30) identify nine stages of activities: identify instructional goals (outcomes), conduct an instructional analysis, identify entry behaviours and characteristics, write performance objectives, develop test items, develop an instructional strategy, select and develop instructional materials (content), design and conduct formative assessment, design and conduct summative assessment. One important stage not mentioned by Gagne (ibid) is the identification of student needs or conducting a situational analysis. This should be done before any planning, design or development take place. A more well known model for the design and development of instructional materials is given by Dick and Carey (1996). This model contains the following phases: analysis, design, development, implementation and assessment.

The stages of the Dick and Carey model are applicable to both residential and distance education programmes. This is confirmed by Ragan (2000:6) who states that *"[G]ood teaching is good teaching!"* According to Ragan (2000), the question is not about residential or distance education, but about what makes for an effective educational experience.

The outcomes of a specific programme provide the foundation for the design, development, delivery and assessment of an educational event. These outcomes serve as a contract between the educator and the student, defining what is to be taught and what is to be learned. Communicating these to the student is crucial for assuring an effective learning experience (Ragan: 2000).

The programme content should relate directly to the stated outcomes and should provide the necessary skills, knowledge and experiences to meet the outcomes. The structuring of the programme should be in accordance with the stated outcomes. Assessment should also be directed towards the stated outcomes.

In summary, all materials for distance education should be specially designed and developed for particular purposes. The materials should support all the functions a teacher would execute in a classroom situation: guiding, motivating, intriguing, expounding, explaining, provoking, reminding, asking questions, discussing alternative answers, appraising each learner's progress and giving appropriate remedial or enrichment support (Rowntree, 1990:11).

2.4.3   Guidelines for the development of WWW materials

There are countless resources providing guidelines for designing materials for on-line distance education programmes. The following considerations from Descy (1997:3-5) are included in this study because they seem most appropriate:

- The designer has very little, if any, control over how the WWW pages will look on another person's computer.

- The most important design decision lies with your target group.

- The second important issue is content: attempt to put something new and unique on the Web.

He proposes the following steps when designing Web pages:

- Outline the material – divide in sections/pages – organise in a logical order.

- Draw a map (storyboard) with links to indicate the relationship between the pages. There should be no dead ends.

- A toolbar at the top of the page is very useful.

- Consistency in the general layout is important – make use of menu/navigation bars.

- Size of files is crucial! No large files and no heavy graphics. Keep graphics under 30K. This will take approximately 32 seconds to download. Remember size equals time.

- Information placement: The most important part of a webpage is the top 300 pixels. This is the part that people see first, and it should therefore grab and hold the attention.

- Colour: The human eye can only distinguish about 32 000 colours. Colour slows down transmission.

- Background: Most well designed WWW pages do have a background. Keep it simple! Remember you have very little control over what people will see.

2.4.4 Congruence between the WWW and Constructivism

When comparing the characteristics of the WWW, and specifically the characteristics of WebCT, with the principles of constructivism, (Paragraph 2.3.2), it is interesting to see that there is a high level of congruence which indicates that quality teaching via the WWW can incorporate constructivistic principles. Cronje (1999) made a synthesis of adult learning needs and the direction of post-secondary education to show how closely these were related and presented it in a table. The researcher decided to use the same format to indicate the congruence between the WWW (WebCT) and the principles of constructivism (Attached as Annexure E).

As an electronic vehicle for the delivery of teaching materials, WebCT has very specific characteristics, such as access to a number of resources, around the clock availability, possibilities for open learning, richness in communication strategies, assessment facilities, to name but a few. Teaching materials that are well designed and developed according to sound instructional design principles and incorporating the principles of constructivism, combine all the elements that ensure quality higher education by means of distance tuition.

TABLE 2.4.4 :

CONGRUENCE BETWEEN THE WWW AND CONSTRUCTIVISM

The Table is attached as Annexure E, page 107.

2.4.5 Academic staff support

Moore and Kearsley (1996:132) state that, for most educators, teaching at a distance (including on-line teaching) involves different skills from those used in the classroom. Their role as teachers changes significantly - from the sage on the stage to the guide on the side. Distance education educators are not teachers any more; they are facilitators of learning. To be a successful facilitator appears to be a major challenge, more particularly, to involve students actively in their own learning.

Tried and true teaching instincts are not necessarily transferable to on-line teaching. Communication is different because educators do not have non-verbal clues and the *"silence"* from the side of the students could be frightening. Educators should search for the meaning of these silences; they should develop an on-line presence with an on-line voice. They should also develop a sense of community among the students and get them actively involved. All these elements are very different from presenting a classroom lesson. Academic staff should therefore be assisted in the transition from traditional classroom-based teaching to facilitating learning via technologies (Benfield, Ultibase listserve, 17 July 2000). This statement is supported by Granger and Benke (in Campbell Gibson, 1998:135) where they propose that academic staff should be trained and evaluated in methods of effective distance instruction.

Ragan (2000) further adds that instructional design and development support for academic staff should include a wide range of services in the creation and preparation of instructional materials for delivery via distance education.

2.5 DIFFERENT NEEDS OF LEARNERS

2.5.1 Student support

The diversity of potential learners should be taken into account when designing distance education materials. Student support services should be as complete, responsive and customer-oriented as possible (Ragan: 2000 and Ritchie & Earnest, 1999:38). According

to Holmberg (1999:110) this support should be methodological, metacognitive, motivational and administrative.

In a substantial number of cases the support a student receives could be the only link s/he has with the institution. In distance education institutions, full-time dedicated staff provide this support, but where single distance education programmes are presented, the administrators or even the instructors will be responsible for these tasks alongside their other duties (Moore & Kearsley, 1996:168).

2.5.2 The needs of adult learners

In Chapter 3 (paragraph 3.5.2) of this study Mash (2000b: no page numbers) indicated that the WHO programme was designed and developed with the following core adult education principles in mind:

- Relevance to own learning;

- Utilising past experience;

- Participation and active involvement;

- Problem-focused;

- Responsibility for own learning;

- Immediate practicability;

- Reflection on learning; and

- Trust and respect between learner and educator.

Mash (2000b: no page numbers) also links the principles of self-directed learning to the adult education principles:

- Learning needs identification;

- Goal formulation;

- Resource identification;

- Appropriate activity implementation; and

- Outcomes assessment.

Burge and Roberts (1998:8) provide two other motivators that drive the actions of adult learners. They state that if these two motivators are in place, students usually perform their best. Firstly, students need to feel competent, they need to feel a sense of mastery in acting independently and secondly, they need to feel connected and that they are in a supportive relationship with their fellow students as well as the educator.

To support and incorporate the abovementioned principles, constructivist principles and collaborative and/or co-operative learning can be applied when designing a programme. But in what other ways can adult learners be motivated? The following list of actions for educators to motivate students was found on the *Web-based Training design and development* website on the WWW on 13 March 2000 on [http://www.dyroweb.com/wbt/crs_dev.html]:

- Create a need;

- Develop a sense of responsibility among the students;

- Create and maintain students' interest;

- Structure experiences to apply content to life;

- Give recognition, encouragement an approval;

- Get excited yourself;

- Establish long-range objectives;

- See the value of internal motives;

- Intensify internal relationships; and

- Give students a choice.

Together with the principles stated by Shin (1998:39-42) in paragraph 2.3 above, it is possible to have positive, motivated students in an on-line programme.

2.5.3 Congruence between the characteristics of adult learners and the principles of constructivist learning

In paragraph 2.3.2 the principles of constructivism were discussed. When these are compared to the characteristics of adult learners (Paragraph 2.5.2 and Chapter 3 , paragraph 3.5.2), the conclusion is that constructivism is a suitable theoretical foundation for the design of programmes for adult learners. The researcher drew up a table to highlight this congruence. The rationale for drawing up these congruence tables was discussed in paragraph 2.4.4 .

Adult learners are independent, goal centred, active learners whose motivation for learning is based on experience, problem solving and application. All these characteristics are addressed by constructivist learning principles such as a focus on learning not teaching, active learning, problem solving and critical thinking, collaborative and co-operative learning and experience.

TABLE 2.5.3 :

CONGRUENCE BETWEEN THE CHARACTERISTICS OF ADULT LEARNERS AND THE PRINCIPLES OF CONSTRUCTIVIST LEARNING

The table is attached as Annexure F, page 108.

2.5.4 The needs of Distance Education students

Moore and Kearsley (1996:2) defines distance education as "… *planned learning that normally occurs in a different place from teaching and as a result requires special techniques of programme design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements.*" Because of the unique nature of distance education, and according to literature in this respect, the distance education student also has very specific needs:

- Contact with educators (Van Zyl in Adey, Heese & Le Roux, 1990:260; Holmberg, 1999:104);
- Someone to provide assistance (Smit in Adey *et al*, 1990:314; Moore & Kearsley, 1996:169; Granger & Benke in Campbell Gibson, 1998:132,134; Holmberg, 1999:129);
- Assurance of personal interest (Smit in Adey *et al*, 1990:314; Holmberg, 1999:125);
- Encouragement from their tutors (Smit in Adey *et al*, 1990:314);

- Ability to convey general study problems to tutors as well as personal and social problems (Smit in Adey *et al*, 1990:314; Moore & Kearsley, 1996:168; Granger & Benke in Campbell Gibson, 1998:134);

- Meet in groups/Interaction (Smit in Adey *et al*, 1990:314; Moore & Kearsley, 1996:169);

- Remedial aid (Smit in Adey *et al*, 1990:314; Moore & Kearsley, 1996:168);

- Prompt feedback about progress (Oosthuizen, 1997:80; Holmberg, 1999:122);

- Peer group evaluation to compare themselves with, evaluate themselves and receive emotional support (Oosthuizen, 1997:82);

- Flexible structure to meet divergent needs (Oosthuizen, 1997:80);

- Availability of support whenever and as often as needed (Sewart in Oosthuizen, 1997:82; Holmberg, 1999:112).

The question is how these needs can be addressed by using the WWW and more particularly WebCT. The distance education student is unique and therefore has unique needs. In order to address these needs, unique and specially designed systems should be in place.

2.5.5 How can the use of the WWW (WebCT) answer the needs of the distance education student?

The researcher developed the following table to compare the needs of the distance education student (as discussed in paragraph 2.5.4) with the characteristics of the WWW (WebCT). From this comparison it seems clear that the WWW could be an effective vehicle to facilitate learning for distance education learners.

TABLE 2.5.5 :
THE NEEDS OF DISTANCE EDUCATION STUDENTS AS COMPARED TO THE CHARACTERISTICS OF THE WWW (WEBCT)

Perceived needs of distance education students	WebCT characteristics
Contact with educators	Different communication options are available on WebCT by means of which the students can contact educators and fellow students. Video clips could be included to put a face to a name.

Perceived needs of distance education students	WebCT characteristics
Someone to provide assistance	Students can use the available WebCT communication tools to make contact whenever they feel the need for assistance.
Assured of personal interest	Students can send private e-mail messages to educators, and in replying to these messages a personal touch is added to the teaching.
Want encouragement from their tutors	Students can read the questions and answers on the bulletin boards and Frequently asked Questions (FAQ's) to see that they are not struggling alone out there with the material. This could be comforting.
Should be able to convey general study problems to tutors as well as personal and social problems	There is no fear of compromising oneself because the private e-mail is secure if handled correctly.
Meet in groups	Chat rooms and discussion groups can be set up to involve students as a group.
Receive remedial aid	Students can move past content which they already know and dwell on that which they find difficult. Assessment quizzes can be repeatedly completed until a personal level of satisfaction is reached.
Want prompt feedback about progress	E-mail and bulletin board answers are prompt and always available. Feedback on certain types of questions/quizzes eg. MCQ, matching and calculated questions is available immediately because it is computer marked.

Perceived needs of distance education students	WebCT characteristics
Want peer group to compare themselves with, evaluate themselves and receive emotional support	Bulletin boards, chat rooms and class lists could help students to feel part of a group. Informal discussion groups could contribute to the student's sense of belonging.
Flexible structure to meet the divergent needs of individual students	Open learning is possible with WebCT.
Support should be available whenever and as often as the student needs it	WebCT is available 24 hours per day, seven days a week on both the intra- and the internet. Students may access and use it as and when it suits them and as and when a need arises.
Enrichment for faster students	Additional information (links) are available for the faster students, but would not exclude anybody.
Access to institution's resources	Students have access to the Library, Administration and other support services.
Students are technologically advanced and might want to use these skills to their advantage while studying	The WWW is the latest technology with the best available options.
Students need to learn how to find and access information	A search tool is available in WebCT.

Adapted from Herman (1997:5)

2.6   SUMMARY

In this chapter a literature review, explaining the theoretical background to the study was provided. It highlighted a number of issues that should be borne in mind when designing, developing, implementing and assessing quality on-line programmes.

These issues firstly include the assurance of quality higher education through the assessment of programmes and ensuring institutional support for distance education efforts. Secondly, new approaches to learning and teaching were discussed. Included in this discussion were the principles of constructivism and how these could be implemented through collaborative and co-operative learning. Thirdly, the issue of on-line teaching and learning in higher education was examined. Programme design and development for on-line teaching was discussed and the researcher developed a congruence table to indicate the relationship between WebCT and the principles of constructivism. Academic staff support also formed part of this discussion. Fourthly, the research focused on the different needs of learners. Attention was given to adult and distance education learners. Here the researcher also developed a congruence table to indicate the relationship between the needs of adult learners and the principles of constructivism. Lastly, the researcher identified the needs of distance education learners and proposed a table to compare their needs with the characteristics of WebCT.

In the following chapter the research design, unit of analysis and case study approach for this study will be discussed.

Chapter 3

RESEARCH DESIGN, UNIT OF ANALYSIS AND DESCRIPTION OF THE CASE

As briefly described in Chapter 1, the research strategy for this study is a qualitative case study. In this chapter, the qualitative case study, the unit of analysis, the interview as data gathering technique, the criteria for selecting the particular case as well as the case itself will be discussed.

3.1   THE QUALITATIVE CASE STUDY AS RESEARCH STRATEGY

As defined by Merriam (1988:16), the qualitative case study is an intensive, holistic description and analysis of a single entity or phenomenon. The case study approach allows for a variety of research methods to be used by the researcher. Multiple sources of data can also be used when applying this strategy.

According to Denscombe (1998:30), *"…the use of case studies has become widespread in social research, particularly with small scale research."* Merriam (1988:xiii) states that a case study approach is often the best strategy for addressing problems where understanding is sought in order to improve practice. Furthermore, it has proved particularly useful for studying educational innovations, for evaluating programmes, and for informing policy. Merriam (ibid) further proposes that a case study should be used when certain questions are raised about a phenomenon and when a certain end product is required.

When deciding whether a case study is the most appropriate design to investigate the problem of interest, Merriam (1988:9) states that the researcher should take the following into consideration:

- the nature of the research question(s);

- the amount of control; and

- the desired end product.

Another determining factor that is mentioned by Merriam (ibid) is whether a bounded system can be identified as unit of analysis.

Stake (in Denzin & Lincoln, 1994:237) states that different researchers have different purposes for studying cases. He identifies the following three types of case study:

- Intrinsic case study,

- Instrumental case study, and

- Collective case study.

The type of case study used for this research is the instrumental case study because "...*a particular case is examined to provide insight into an issue or refinement of theory. The case is of secondary interest; it plays a supportive role, facilitating our understanding of something else. The choice of case is made because it is expected to advance our understanding of that other interest*" (Stake in Denzin & Lincoln, 1994:237). The World Health Organisation (WHO) Mental Health Disorders in Primary Care programme is used as instrumental case study to provide insight into the applicability of the 24 benchmarks to the University of Stellenbosch context.

3.1.1   Characteristics of case studies

Denscombe (1998:30,31) and Merriam (1988:11,12) provide the following characteristics of case studies:

- They focus on only one instance of the phenomenon or situation that is to be investigated. The aim is to illuminate the general by looking at the particular.

- They study phenomena in detail.

- Case studies tend to be holistic rather than dealing with isolated factors. Attention is given to the processes which lead to certain outcomes. The case study explains why certain outcomes might occur instead merely of establishing the nature of the outcomes themselves.

- The *"case"* that forms the basis of the investigation is usually something that already exists. It is not a situation that is artificially created for the purposes of research.

- The researcher can use a variety of sources, a variety of data and a variety of research methods.

- The nature of case studies is descriptive. The description is usually qualitative which implies that it uses prose and literary techniques to describe, elicit images and analyse situations.

3.1.2 Advantages of case studies

Denscombe (1998:39,40) lists the following advantages of case studies:

- They focus on one or a few instances which allows the researcher to deal with the subtleties and intricacies of the case.

- The analysis is holistic rather than based on isolated factors.

- It allows for the use of a variety of research methods. It actually encourages the use of multiple methods.

- It fosters the use of multiple sources of data. This in turn facilitates the validation of data through triangulation.

- They are particularly suitable where the researcher has little control over the events. They study the phenomena as they occur.

- They fit in well with the needs of small scale research.

- Theory-building as well as theory-testing research can use this approach.

- Miles and Huberman (in Fourie 1996:250) also point out that "...*qualitative findings have a certain undeniability that is often far more convincing to a reader than pages of numbers*".

3.1.3 Disadvantages of case studies

The use of case studies also has its disadvantages as listed by Denscombe (1998:40,41):

- The point at which case studies are most vulnerable is in relation to the credibility of generalisations made from its findings.

- Case studies are often perceived as producing *"soft"* data. The approach is accused of lacking the degree of rigour expected of social science research. The view of case study research is that it focuses on processes and not end products, that it relies on qualitative interpretative methods instead of quantitative statistical procedures.

- It might be difficult to define the boundaries of the case.

- Negotiating access to documentation could be problematic as it might have ethical implications.

3.1.4   The validity of the case study method

As mentioned above, some researchers could question the validity of the case study method. The following questions could be asked:

- Are the findings unique to the particular case?

- What is the validity of generalisations on the basis of research into only one instance?

Denscombe (1998:40,41) proposes the following answers to these questions:

- Although each case is unique in some respects it is also a single example of a broader class of things.

- The extent to which findings from the case study can be generalised to other examples in the class, depends on the degree of similarity to others of its type.

In this study, the researcher will pre-empt possible criticism by addressing the above issues.

As already mentioned, the type of study implemented for this research is the instrumental case study because *"...a particular case is examined to provide insight into an issue or refinement of theory. The case is of secondary interest; it plays a supportive role, facilitating our understanding of something else. The choice of case is made because it is expected to advance our understanding of that other interest"* (Stake in Denzin & Lincoln, 1994:237). The World Health Organisation (WHO) Mental Health Disorders in Primary Care programme is used as instrumental case to provide insight into the applicability of the 24 benchmarks to the University of Stellenbosch context.

This study will not try to generalise its conclusions, but the researcher will draw specific deductions and conclusions from the results of this particular case study with a view to future quality control measures at the University of Stellenbosch.

3.2 THE UNIT OF ANALYSIS

The unit of analysis for this study is the 24 benchmarks for success in Internet-based distance education. The description of the unit of analysis that follows is a summary from *Quality on the Line: Benchmarks for success in Internet-based Distance Education* (2000).

3.2.1 Background

The debate over the use of traditional classroom-based teaching versus on-line teaching is on-going. One of the issues discussed in these debates is the concern about quality. The extraordinary growth of technology-based distance learning has prompted several organisations to develop principles, guidelines or benchmarks to ensure quality distance education. The one question being asked most often is whether these benchmarks for distance education are appropriate and necessary to ensure quality Internet-based distance education.

The National Education Association (NEA) and Blackboard Incorporated sponsored the Institute for Higher Education Policy in the USA to conduct research into the merits of internet-based distance learning and to examine the quality benchmarks developed by various institutions. The study was designed to ascertain the degree to which the benchmarks were actually incorporated in the policies, procedures and practices of the institutions, and the study also sought to determine the importance of these benchmarks to the academic staff, administrators and students (Quality on the Line, 2000:1).

The Institute for Higher Education Policy focused on Internet-based distance education for the following reasons (Quality on the Line, 2000:6,7):

- Internet-based distance education is becoming the predominant technology in distance education. A growing number of academic staff is also using the Internet to complement traditional classroom-based programmes.

- Internet-based distance education programmes allow the teaching/learning process to take place at any time and any place. Asynchronous interactive learning has become an important part of the teaching/learning process.

- Internet-based distance education is in many ways fundamentally different from traditional classroom-based education.

The results of this study were meant to assist policymakers, state co-ordinating boards, accrediting bodies, state legislatures as well as academic staff and students, to make informed judgements with regard to the quality of Internet-based distance education. The major conclusion of the report was that much is still unknown about the ways in which technology can enhance the teaching/learning process (Quality on the Line, 2000:6).

The study was conducted as a case study and the benchmarks were validated through a process which consisted of three sequential phases.

3.2.2   Phase 1

In the first phase (Quality on the Line, 2000:9), a comprehensive literature search was conducted to compile a list of all the benchmarks developed by the different organisations. The benchmarks were grouped into the following seven categories:

1.   **Institutional support**: The activities of the institution to ensure an environment supportive to distance education as well as policies that encourage the development of Internet-based teaching and learning.

2.   **Programme Development**: Criteria for the development of programmes can be produced by individual academic staff members, subject experts or commercial enterprises.

3.   **Teaching/Learning process**: Activities related to the art of teaching, including processes that ensure interactivity, collaboration and modular learning.

4.   **Programme structure**: Activities that support and relate to the teaching/learning process. These include outcomes, library resources, types of materials, response time and student expectations.

5.   **Student support**: The array of student services normally found on a university campus, including admissions, financial aid, student training and assistance while using the Internet.

6. **Academic staff support**: Activities that assist academic staff in teaching on-line, including the transition from traditional classroom-based teaching and continuing assistance throughout the teaching period.

7. **Evaluation and assessment**: Policies and procedures that address how, or if, the institution assesses Internet-based distance education.

A final list of 45 benchmarks was compiled. This list is attached as Annexure D.

3.2.3 Phase 2

Institutions with a track record of distance education and who provided leadership in Internet-based distance education, were identified. The institutions had to comply with the following criteria (Quality on the Line, 2000:9):

- substantial experience in distance education;

- recognised as leaders in distance education;

- regional accreditation; and

- substantial offerings of degree programmes via on-line distance education.

The following six institutions eventually took part in the study:

1) Brevard Community College,

2) Regents College,

3) University of Illinois at Urbana-Champaign,

4) University of Maryland University College,

5) Utah State University,

6) Weber State University.

3.2.4 Phase 3

The third phase took place during September 1999 and January 2000. During this phase of the study, the above institutions were visited by staff from the Institute who assessed

the degree to which the campuses incorporated the benchmarks in their Internet-based distance learning programmes.

These site visits included interviews with academic staff, administrators and students. They were interviewed on both the presence and importance of the original 45 benchmarks to determine if these were followed and what impact they could have on academic quality. A survey, using a Likert scale, was also administered to each interviewee. In total 147 respondents took part in the research.

The results of the study revealed that the benchmarks were considered to be important and that the institutions attempted to incorporate them into their policies, practices and procedures. The analysis resulted in the elimination of thirteen benchmarks and the addition of three. Several others were combined because they were related. The final outcome therefore were 24 benchmarks that are essential to ensure quality in Internet-based distance education (Quality on the Line, 2000:23).

The 24 benchmarks for success in on-line education are attached as Annexure C.

To determine the applicability of these benchmarks to the University of Stellenbosch context, they have to be applied to a case study and qualitative data need to be gathered. Semi-structured interviews were conducted to gather this data.

3.3 THE INTERVIEW AS DATA GATHERING TECHNIQUE

For the purpose of gathering data for this research, the interview was chosen as an appropriate data gathering technique. Dexter (in Merriam 1988:72) explains that interviewing is the preferred method of data gathering when *"... it will get better data or more data or data at less cost than other tactics"*. According to Bless and Higson-Smith (1995:106) an interview is a direct way of obtaining information because the participants are obliged to answer questions while in a discussion with the interviewer. Interviews are used in qualitative research to determine what the views of the interviewees are (Bouma & Atkinson, 1995:217).

According to Dexter (in Merriam, 1988:74) the following three variables determine the nature of interaction which will take place during an interview and they also determine the type of information obtained:

- The personality and skill of the interviewer;

- The attitudes and personality of the interviewee; and

- The definition of the situation by both the interviewer and the interviewee.

Interviews can be structured, semi-structured or unstructured, but only the last two types can be used in qualitative research. In this study, the semi-structured interview was chosen for the reasons mentioned by Merriam (1988:74): *"In the semi-structured interview, certain information is desired from all the respondents. These interviews are guided by a list of questions … but neither the exact wording or the order of the questions is determined ahead of time."* According to Cohen and Manion (in Nduna, 2000:90) semi-structured interviews are less formal, the interviewer is free to modify the sequence of questions, change the wording, explain and add to the questions. The interviewer can also probe for more specific answers to clarify and eradicate any misunderstanding.

Using the semi-structured interview has the following advantages*: "[It] provides for continuous assessment and evaluation of information by the inquirer, allowing him to redirect, probe and summarise* (Guba & Lincoln in Merriam, 1988:86*). It allows us to determine people's feelings, thoughts, intentions, the meanings they attach, their perspectives - aspects we cannot observe directly. The interview, however, also has its disadvantages: to interview people is costly in time and money. For this reason, the number of interviews are usually small. The presence of an interviewer can result in participants being embarrassed and dishonest because they are unable remain anonymous"*.

Nevertheless, as Patton (in Merriam, 1988:86) states: *"Interviewing, like any other data gathering technique, has its strengths and its limitations. The researcher who attends to the limitations while maximising the strengths inherent in all phases of the interview process will be richly rewarded by the data obtained. For the interview is the best way - and perhaps the only way - to determine what is in and on someone else's mind."*

The interviewees for this study were selected because of their perceived involvement with the design, development and implementation of the WHO programme. The interviews in the study were based on the 24 International Benchmarks (Attached as Annexure C) and were electronically recorded, except for the feedback from one respondent which was in the form of a questionnaire as she happened to be in the USA at the time. In-depth semi-structured interviews were conducted with the following persons:

TABLE 3.3 :

LIST OF INTERVIEWEES

Name	Position	Responsibilities within DDE
Dr Bob Mash	Lecturer in the Department of Family Medicine	• Designer, • Developer and • Educator of the WHO programme
Prof T de Coning	Senior Director of the Division for Distance Education (DDE) at the US	• Conducts market research • Liaison • Cost analysis • Marketing of programmes • Programme co-ordinator
Ms A de Klerk	Head: Division for Distance Education (DDE) in the Registrar's Office	• Administrative issues from the Registrar's office • Link between Management information, the Registrar and the DDE
Ms E J van Rensburg	Graphic artist at DDE	• Technical layout of documents • Converting documents to Adobe Acrobat • Printing of materials

Name	Position	Responsibilities within DDE
Ms J Combrinck	Administrative Officer at the DDE	• Logistics • Assignments • Finances • Facilitators
Ms A van der Merwe	Advisor: Digital Learning (Uni-Ed) (Written Commentary)	• WebCT training and support

The results of these interviews will be reported in Chapter 4 of this study.

3.4   THE CASE STUDY

The World Health Organisation Mental Health Disorders in Primary Care programme forms the case study for this research. Background on the selection criteria and the programme *per se* will consequently be provided.

3.4.1   Criteria for selection of the case

When selecting a case, it is important to ensure that the case complies with the following criteria, as stated by Denscombe (1998:33), to justify the selection.

Selection on the basis of suitability

On the basis of suitability, the choice of the WHO programme as case study for this research, can be justified as follows:

- At the time, this programme was a *typical instance* of programmes which could be designed and developed as Distance Education programmes at the US, making use of WebCT and the team approach towards development.

Selection on a "pragmatic" basis

Researchers are warned by Denscombe (1998:33) not to select a case only because it is convenient. Convenience could play a role, but cannot be justified scientifically.

- In this case, the programme is the only example at the US which is delivered in WebCT, distance education and that is designed and developed by a team.

Selection on the basis of "no real choice"

Sometimes researchers do not have a wide choice when they have to select a suitable case. In this instance, this is a very applicable criterion (see above reasons) and therefore the case provides a unique opportunity for analysis and evaluation.

Two other criteria with which a case should comply are the following (Denscombe: 1998: 38):

- The case should be a self-contained entity; and

- The case should have fairly distinct boundaries.

Denscombe (1998:42) compiled the following checklist for researchers who use case studies. The suitability of the case study for research purposes is indicated when the researcher feels comfortable to answer all the questions affirmatively. The checklist was completed for using the WHO programme as case study for this research. The researcher feels comfortable that the nine questions can be answered affirmatively.

TABLE 3.4.1 :

CHECKLIST FOR THE CASE STUDY APPROACH

When undertaking research which involves a case study approach you should feel confident about answering "yes" to the following questions:		
1	Have the criteria for selection of the case (or cases) been described and justified?	Yes
2	Has the case (or cases) been identified as a particular instance of a type of social phenomenon? (eg. kind of event, type of organisation)	Yes
3	Is the case study a fairly self-contained entity?	Yes
4	Is the research based on a naturally occurring situation?	Yes
5	Have the boundaries to the case been described and their implications considered?	Yes

When undertaking research which involves a case study approach you should feel confident about answering "yes" to the following questions:		
6	Has careful consideration been given to the issue of generalisations stemming from the research?	Yes
7	Have the significant features of the case been described and have they been compared to those found elsewhere among the type of phenomenon being studied?	Yes
8	Does the research make suitable use of multiple methods and multiple sources of data?	Yes
9	Does the research pay due attention to relationships and processes, and does it provide a holistic perspective?	Yes

Denscombe (1998:42)

The criteria for selection of the case have now been described and justified. In the following section more information will be given about the programme selected as the case study.

3.5 WORLD HEALTH ORGANISATION (WHO) MENTAL HEALTH DISORDERS IN PRIMARY CARE PROGRAMME [4]

In paragraphs 3.1 and 3.4 of this chapter the case study as research strategy and the selection of the case were discussed. What follows is a description of the WHO Mental Health Disorders in Primary Care programme which forms the object of this case study. The information that follows has been taken from an unpublished article by the programme designer, the research proposal for his PhD research as well as the on-line WebCT study guide for the WHO programme.

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[4] The WHO Mental Health Disorders in Primary Care course is available at the following

Internet address: http://webct-dev.sun.ac.za:8900

Username: 12345678

Password: 12345678

The username and password will only be available until the end of January 2001.

3.5.1 Background

According to Mash (1999:1), primary health care is the main setting within which mental disorders are managed. There is therefore a need to improve the recognition and management of mental disorders within the primary care context. In response to this need, the WHO developed the ICD 10: Diagnostic and Management Guidelines for Mental Disorders in Primary Care. In addition, the *"Mental Disorders in Primary Care"* educational package was also developed. This package focuses on the following six conditions: depression, anxiety disorders, alcohol use disorders, sleep problems, chronic tiredness and unexplained somatic complaints. The programme has already been presented in several overseas countries but they did not have much success due to the fact that it was taught by means of more traditional approaches.

During 1999, Dr Bob Mash from the Department of Family Medicine, University of Stellenbosch, approached the Division for Distance Education at the University of Stellenbosch with a request to present the World Health Organisation (WHO) Mental Health Disorders in Primary Care programme via distance education making use of WebCT. According to Dr Mash, the Departments of Family Medicine in South Africa realised that general practitioners have difficulty attending residential programmes. They prefer distance education packages which reduce costs in terms of paying locums, travelling and accommodation. This is even more applicable to doctors in rural areas. This project was a first attempt to present this programme via on-line distance education. The programme was presented in English. The WebCT development of this programme started in 1999 and it was presented for the first time from August to December 2000.

3.5.2 The development phase

The development of this on-line distance education programme is divided into three different phases which is explained in the following table.

TABLE 3.5.2 :

DEVELOPMENT PHASES OF THE WHO PROGRAMME

Phase	Activities	Persons involved
Phase 1	Participatory action research to determine how the WHO Mental Health Disorders course should be adapted for the South African context	Co-operative inquiry group consisting of 10 General Practitioners in South Africa
Phase 2	Development of the Distance Education programme in WebCT	Dr Bob Mash DDE Uni-Ed IT HUMARGA
Phase 3	Summative evaluation	Dr Bob Mash Students Independent research consultant (Peer review)

According to Mash (2000b: no page numbers), the development of the programme was based on the following principles:

i)   The core adult education principles (Spencer & Jordan, in Mash: 2000b: no page numbers) as listed below.

Adults are motivated by learning which:

– is perceived as relevant to the self;

– makes use of the previous experience of the learners;

– is participatory and actively involves the learners;

– is focused on problems;

– is designed so that they can take responsibility for their own learning;

    – can be immediately applied in practice;

    – involves cycles of action and reflection; and

    – is based on mutual trust and respect.

ii) Closely allied to these principles are those of self-directed learning (Spencer & Jordan, in Mash: 2000b: no page numbers).

The learner takes the initiative for:

    – Diagnosing learning needs;

    – Formulating goals;

    – Identifying resources;

    – Implementing appropriate activities; and

    – Evaluating outcomes.

3.5.3 The Programme content

The programme consists of eight modules of two weeks each, plus two extra weeks to enable students to wrap up their studies. This gives a total of eighteen weeks to complete the programme. The following outcomes were established for the programme (Mash, 2000b: no page numbers):

By the end of this programme students should be able to:

- generate and test psychological hypotheses from relevant patient cues;

- make a holistic assessment of the patient and specific psychiatric diagnosis;

- prescribe appropriately, use relevant psychological therapies and refer to other resources;

- use interviewing skills that enhance the doctor-patient relationship, improve recognition and management of emotional problems;

- be more self-aware of own values, beliefs and attitudes towards patients with mental problems; and

- know about common mental health problems in both adults and children, including emergencies, diagnostic criteria, management options, medico-legal and ethical issues.

3.5.4   Study materials

The study materials which the students received upon registration were printed materials to be used when consulting with a patient, a CD with video material *and "getting started with your computer"* information.

The printed materials were in the form of desk-top tools and included checklists, handycards, leaflets, flowcharts and questionnaires for the following mental problems: depression, anxiety disorders, alcohol use disorders and stress disorders. All of these were also available on-line in Afrikaans and Xhosa. The demonstration of certain skills forms an important part of the programme. These skills were recorded on a video to prevent students from struggling with downloading files off the Internet. The *"getting started"* information indicated to students how to set up their computer and how to find the programme on the Internet.

The homepage of the electronic study guide contains seven items: getting started, programme contents, communication, resources materials, self-assessment, programme tools and a link to the external funder of the programme. A short description of each of these will be given below:

- Getting started: Gives students an overview of WebCT and instructions to set up their computers for specific programmes and utilities;

- Programme content: The programme content is presented as short interactive chunks of information;

- Communication: Communication and interactivity both form important building blocks of this programme. Communication takes place via e-mail, telephone conversation, private mail, discussion groups on the bulletin board, help from experts, help from the programme organiser and the optional use of chat rooms;

- Resource materials: The resource material consists of four electronically available textbooks. These are only available for the 18 week period

and the programme designer negotiated the copyright with the publishers;

- Self-assessment: Each module contains a series of self-assessment quizzes using multiple choice and matching-type questions;

- Programme Tools: WebCT has certain built-in tools. The following are available for students in this programme:

  - Setting up your CD Rom drive;

  - Select certain pages from the programme to save or print;

  - Resume where you left the last time;

  - Search the glossary (In this programme the glossary was used as bibliography);

  - Search the programme content for a keyword;

  - View your marks and records.

- The funder: The programme was funded by Sanofi-Synthelabo and a link to their homepage was given on the homepage of the electronic study guide.

3.5.5   Assessment and accreditation

The programme does not have any formal summative examination. Students have to complete the programme within the given eighteen weeks. They are then assessed on their completion of all the self-assessment questions and successful completion of all the action-reflection journal tasks. This programme gives the students 40 CPD (Continuing Professional Development) points from the Health Professions Council, a certificate from the University of Stellenbosch, two credits towards the Masters in Family Medicine degree, and accreditation towards the College of Medicine's Diploma in Psychiatry.

3.6   SUMMARY

In this chapter, the qualitative case study, the unit of analysis, the interview as data gathering technique, the criteria for selecting the particular case as well as the case itself were discussed.

The qualitative case study is an intensive description and analysis of a single phenomenon. The instrumental case study was used for this study because the case (WHO programme) was examined to provide insight into the unit of analysis (the applicability of the 24 benchmarks). The last part of this chapter gave attention to the case study. Firstly, the criteria for selection of the case was given and thereafter the case was discussed in depth.

The WHO Mental Health Disorders in Primary Care programme, which was the case study for this research, is a distance education programme, consisting of eight modules and presented via WebCT, over a period of eighteen weeks. The programme was developed in two phases and will be evaluated during a third phase.

Students received printed materials, a CD with video material and "getting started" information. The electronic studyguide contained the following seven items: getting started, programme contents, communication, resource materials, self-assessment, programme tools and a link to Sanofi-Synthelabo (a funder). Students were not assessed by means of a formal examination, but they had to complete the programme within the given time and they also had to complete all the self-assessment questions as well as the action-reflection journal tasks to be successful.

In the following chapter, the 24 final benchmarks will be applied to the World Health Organisation (WHO) Mental Health Disorders in Primary Care programme to determine their applicability to the University of Stellenbosch context.

Chapter 4

APPLICATION OF THE 24 BENCHMARKS TO THE WHO PROGRAMME

The main purpose of this study is to apply 24 internationally developed benchmarks for quality on-line distance education to a post-graduate distance education programme in medical education at the University of Stellenbosch. This was done in order to determine the applicability of these benchmarks for teaching via the World Wide Web (WWW) at the University of Stellenbosch. In this chapter, the results of the application will be provided and an analysis of the data will be done.

4.1   THE PROCESS

The researcher conducted semi-structured interviews with the respondents listed in Chapter 3 (Table 3.3). The 24 benchmarks (Attached as Annexure C) served as interview protocol for all the interviews. One of the interviewees, Antoinette van der Merwe, was overseas at the time and she completed the interview protocol as a questionnaire. All interviews were electronically recorded on audio cassette and transcribed. (These are available from the researcher). From the transcriptions, a tabulated report was drawn up for each participant. These reports were in the same format as the results of the research in Table 4.3. The data from all the reports were then integrated into a single report from which the final results were compiled.

4.2   VALIDITY AND RELIABILITY

In Chapter 1 of the study, validity is defined as the accuracy of research findings. Reliability, on the other hand, asks whether the same results will be obtained when the same methods are utilised by other researchers (Mouton, 1996:144). Unfortunately, reliability decreases as validity increases as indicated by Bless and Higson-Smith (1995:140). They use the following example to illustrate this point: Interviews are usually very valid because they allow the researcher to discuss issues in great depth with the respondents. On the other hand, interviews require a good deal of subjective interpretation on the part of the researcher which reduces reliability.

In order to control validity in this study, in-depth semi-structured interviews were conducted with all the individuals who participated in, or contributed to the WHO programme (Chapter 3, paragraph 3.3).

Reliability was controlled by clarifying and adhering to the research plan and by explicating the assessment criteria to all participants in the research. To further enhance reliability, triangulation was employed by discussing and cross-checking the results (as reported in the following paragraph) with the participants as well as with colleagues to minimise subjective interpretation.

4.3   THE RESULTS

The results of the research is reported in Table 4.3 as follows:

- The 24 benchmarks are listed in the first column.

- In the next two columns the applicability of each benchmark to the design, development and implementation of the WHO programme is provided.

- The fourth column provides indications of systems/support/infrastructure which were not in place at the University of Stellenbosch when the WHO programme was designed, developed and implemented and could therefore not be assessed for quality by this study.

- The fifth column indicates which of the systems in column four should be addressed urgently by the University of Stellenbosch to ensure quality in on-line provision of learning programmes.

TABLE 4.3 :

RESULTS OF THE APPLICATION OF THE 24 BENCHMARKS

List of Benchmarks	Applic able	Not applic able	Not in place yet	Should be addres- sed
Institutional Support Benchmarks				
1. A documented technology plan that includes electronic security measures (i.e. password protection, encryption, back-up systems) is in place and operational to ensure both quality standards and the integrity and validity of information	*		*	*
2. The reliability of the technology delivery system is as failsafe as possible	*			
3. A centralised system provides support for building and maintaining the distance education infrastructure	*		*	*
Programme Development Benchmarks				
4. Guidelines regarding minimum standards are used for programme development, design, and delivery, while learning outcomes - not the availability of existing technology- determine the technology being used to deliver programme content	*		*	*
5. Instructional materials are reviewed periodically to ensure they meet programme standards	*		*	*
6. Programmes are designed to require students to engage themselves in analysis, synthesis, and evaluation as part of their programme and programme requirements	*			
Teaching/Learning Benchmarks				
7. Student interaction with academic staff and other students is an essential characteristic and is facilitated through a variety of ways, including voice-mail and/or e-mail	*			

List of Benchmarks	Applic able	Not applic able	Not in place yet	Should be addres- sed
8. Feedback on student assignments and questions is constructive and provided in a timely manner	*			
9. Students are instructed in the proper methods of effective research, including assessment of the validity of resources		*		
Programme structure Benchmarks				
10. Before starting an on-line programme, students are advised about the programme to determine (1) if they possess the self-motivation and commitment to learn at a distance and (2) if they have access to the minimum technology required by the programme design	*		*	*
11. Students are provided with supplemental programme information that outlines programme objectives, concepts, and ideas, and learning outcomes for each programme are summarised in a clearly written, straightforward statement	*			
12. Students have access to sufficient library resources that may include a *"virtual library"* accessible through the WWW	*			
13. Academic staff and students agree upon expectations regarding times for student assignment completion and academic staff response	*		*	
Student support Benchmarks				
14. Students receive information about programmes, including admission requirements, tuition and fees, books and supplies, technical and proctoring requirements, and student support services	*			

List of Benchmarks	Applic able	Not applic able	Not in place yet	Should be addres- sed
15. Students are provided with hands-on training and information to aid them in securing material through electronic databases, interlibrary loans, government archives, news services, and other sources		*		
16. Throughout the duration of the programme, students have access to technical assistance, including detailed instructions regarding the electronic media used, practice sessions prior to the beginning of the programme, and convenient access to technical support staff	*		*	*
17. Questions directed to student service personnel are answered accurately and quickly, with a structured system in place to address student complaints		*		*
Academic staff support Benchmarks				
18. Technical assistance in programme development is available to academic staff, who are encouraged to use it	*			*
19. Academic staff members are assisted in the transition from classroom teaching to on-line instruction and are assessed during the process	*			*
20. Instructor training and assistance, including peer mentoring, continues throughout the progression of the on-line programme	*	*	*	*
21. Academic staff members are provided with written resources to deal with issues arising from student use of electronically-accessed data		*		*

List of Benchmarks	Applic able	Not applic able	Not in place yet	Should be addres- sed
Evaluation and Assessment Benchmarks				
22. The programme's educational effectiveness and teaching/learning process is assessed through an evaluation process that uses several methods and applies specific standards	*		*	*
23. Data on enrolment, costs, and successful/innovative uses of technology are used to evaluate programme effectiveness	*		*	*
24. Intended learning outcomes are reviewed regularly to ensure clarity, utility and appropriateness	*			

4.4   DISCUSSION AND ANALYSIS OF THE RESULTS

The results from table 4.3 will be discussed in the following categories:

- Criteria not applicable to the WHO programme;

- Criteria applicable to the WHO programme and systems available/in place at the US;

- Criteria applicable to the WHO programme and systems not available/not in place at the US;

<div align="center">

TABLE[5] 4.4A :

CRITERIA NOT APPLICABLE TO THE WHO PROGRAMME

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9. Students are instructed in the proper methods of effective research, including assessment of the validity of resources	
15. Students are provided with hands-on training and information to aid them in securing material through electronic databases, interlibrary loans, government archives, news services, and other sources	

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[5] Benchmarks will retain their original numbers in all the tables.

17. Questions directed to student service personnel are answered accurately and promptly, with a structured system in place to address student complaints
20^6. Instructor training and assistance, including peer mentoring, continues throughout the progression of the on-line programme
21. Academic staff members are provided with written resources to deal with issues arising from student use of electronically-accessed data

Criteria 9 and 15: According to the principal designer of the WHO programme, it was never the intention of the programme to (1) instruct students in the proper methods of effective research, including assessment of the validity of resources or (2) to provide students with hands-on training and information to aid them in securing material through electronic databases, interlibrary loans, government archives, news services, and other sources (Mash, 2000a: Personal Interview). Where materials were needed for the WHO programme, it was embedded within the WebCT study guide (Chapter 3, Paragraph 3.5.2). However, these seem important elements to be included in on-line programmes as discussed in Chapter 2 (Table 2.5.5).

Criterion 17: Although an enquiry system is in place at the DDE, the WHO programme did not have the opportunity to make use of it, because it was not administered by the DDE Administrative Department (Mash, 2000a: Personal Interview and De Klerk, 2000: Personal Interview). For distance education students it is very important to receive prompt and accurate feedback on their queries. The needs of distant education students are discussed in Chapter 2 (paragraph 2.5.4).

Criterion 20: Instructor training and assistance by Uni-Ed was always available and continued throughout the design, development and implementation of the WHO programme. Peer mentoring however, did not take place and is therefore not applicable. The designer indicated that he would be willing to act as mentor for academic staff who follow the same route in future (Mash, 2000a: Personal

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[6] This benchmark addresses two different issues (1.) instructor training and assistance and (2.) peer mentoring) and is therefore listed and discussed in the "Applicable" as well as "Not Applicable" columns.

Interview). Supporting academic staff with the transition from residential to on-line teaching is also an important element for quality higher education offered in the distance education mode (See Chapter 2, paragraph 2.4.5).

Criterion 21: This criterion is not applicable to the WHO programme because it was not administered through the DDE Administrative Department (Mash, 2000a: Personal Interview and De Klerk, 2000: Personal Interview). This is, however, an important element of all education. The US thus included student feedback in its Institutional Plan (1999:2) because feedback from students is considered being important to *"...help identify development areas in respect of subjects/modules and the teaching provided by academics..."*

TABLE 4.4B :
CRITERIA APPLICABLE TO THE WHO PROGRAMME AND SYSTEMS AVAILABLE/
IN PLACE AT THE US

2.	The reliability of the technology delivery system is as failsafe as possible
4.	Guidelines regarding minimum standards are used for programme development, design and delivery, while learning outcomes - not the availability of existing technology- determine the technology being used to deliver programme content
6.	Programmes are designed to require students to engage themselves in analysis, synthesis and evaluation as part of their programme requirements
7.	Student interaction with academic staff and other students is an essential characteristic and is facilitated through a variety of ways, including voice-mail and/or e-mail
8.	Feedback on student assignments and questions is constructive and provided in a timely manner
11.	Students are provided with supplemental programme information that outlines programme objectives, concepts, and ideas, and learning outcomes for each programme are summarised in a clearly written, straightforward statement

12. Students have access to sufficient library resources that may include a *"virtual library"* accessible through the WWW
14. Students receive information about programmes, including admission requirements, tuition and fees, books and supplies, technical and proctoring requirements, and student support
20[7]. Instructor training and assistance, including peer mentoring, continues throughout the progression of the on-line programme

Criterion 2: The WebCT programme management system is reliable and failsafe. Up to now the US has not experienced any problems with WebCT with reference to these two points in any of the programmes (see Annexure B) presented via the system (Van der Merwe, 2000: Written Commentary).

Criteria 4 and 6: These two criteria are grouped together as programme development benchmarks. No written guidelines regarding minimum standards for programme development, design and delivery are in place at the US, but the staff from Uni-Ed provide these guidelines when consulting with designers (Van der Merwe, 2000: Written Commentary). According to Mash (2000a: Personal Interview) the issue of minimum standards is a very important need at the US. He had the necessary knowledge for designing programmes and teaching via distance education, but he still had to learn much by trial and error. He suggested that more meetings should be held prior to the design of a distance education programme to do thorough planning and to give guidelines about writing for, and teaching on, the WWW.

For the WHO programme, distance education was selected, since many general practitioners find it extremely difficult to attend residential programmes because of cost implications (programme fees, travel, accommodation and locums). Presenting the programme via distance education *"...would increase accessibility ... and allow a longer, more practice-based and effective educational experience."* (Mash, 2000b: no page numbers). It would also allow the programme to be offered nationally to a wide

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[7] This benchmark addresses two different issues (1.) instructor training and assistance and (2.) peer mentoring) and is therefore listed and discussed in the "Applicable" as well as "Not Applicable" columns.

variety of general practitioners. Moreover, traditional training-of-trainers, one day workshops, talks and lectures have *"...shown to be ineffective in changing clinical practice"* (ibid).

Programme content, outcomes and student learning are the main criteria when deciding on appropriate technology and therefore it was decided to deliver the WHO programme via WebCT (Mash, 2000b: no page numbers). Making use of technology would allow the distance education option, while using the advantages of technology for communication and collaboration. (Discussed in Chapter 2, paragraph 2.3.3.)

The following quote from Jonassen and McAleese (2000:3) underlines the importance of designing student-centred programmes with the focus on active learning, communication, collaboration and reflection:

"...the goal of universities should be to produce reflective practitioners. Reflection is a metacognitive strategy. Technology can enhance this process. Computers can provide a conversational environment in which the learner can apply knowledge to problems and consider their actions as re-usable events. Learners can control their learning, learn from others and develop reflection in action and reflection on actions as metacognitive skills."

Wulff (in Mash, 2000b: no page numbers) defines reflection as a learner's awareness of and thinking about the experiences of learning, making meaning from those experiences and organising those meanings into new knowledge and/or linking them to prior knowledge structures.

Berge (1997:38) gives the following continuum for teaching methods. On this continuum it is clear that implementing reflection as teaching method makes the learning experience highly student-centred:

Teacher-focused
Lecture
Questioning/recitation
Drill and practice
Guided discovery
Demonstration/modeling
Discussion
Collaborative learning activities
Authentic learning activities
Self-assessment/reflection
Student-focused
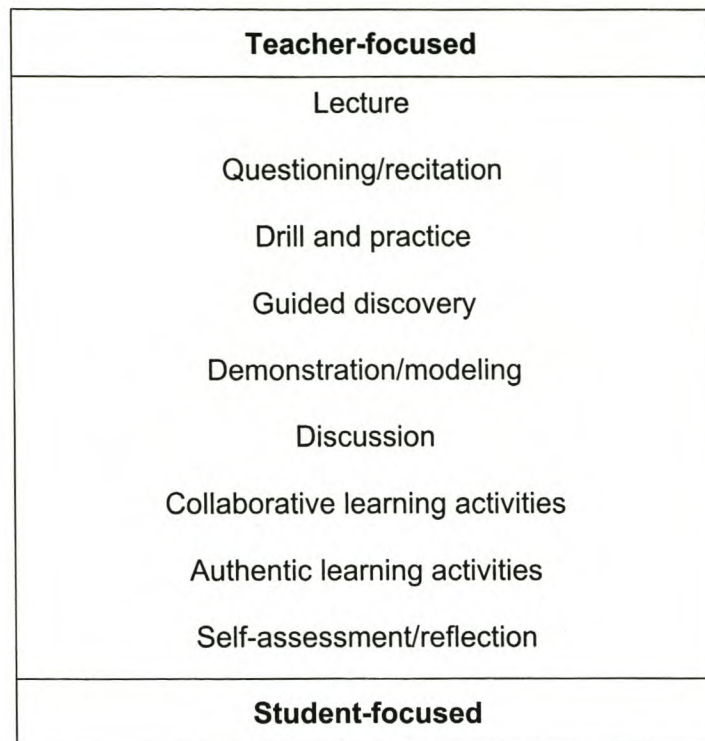
FIGURE 4.4 :

Teaching methods continuum (Berge, 1997:38)

Every module in the WHO programme involved action-reflection cycles and learners were obliged to go through a process of planning, action (analysing), observation (monitoring) and reflection (revising)[8] (Mash, 2000b: no page numbers). The lecturer divided the students into discussion groups and they had to send their reflective journals to the group for feedback and discussion on the bulletin board (Mash, 2000b: no page numbers). According to Figure 4.4, the WHO programme is highly student-focused because it was built upon reflection, authentic learning, collaborative learning and discussion. Demonstration was incorporated through the video material on the CD.

Criteria 7 and 8: In the teaching and learning situation, interaction and communication are essential. Bates (1995:23) states that third generation distance education makes use of two-way communication that allows for interaction between the

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[8] Minhee Shin, in his article Promoting Students' self-regulation ability: Guidelines for Instructional Design, lists planning, analysing, monitoring and revising as components of strategic knowledge. Strategic knowledge is one of the elements of self-regulation which is defined as the ability to participate actively in one's own learning.

educator and the remote student and also between remote students, either as individuals or as groups.

The development of communication skills within the WHO programme was a major challenge (Mash, 2000b: no page numbers). In the end the following possibilities were included:

- e-mail and telephonic access to the tutor;

- private mail within WebCT for all participants;

- membership of a discussion group on the bulletin board;

- help from a Mental Health expert on a dedicated bulletin board;

- help from the programme designer for technical or programme related issues via a dedicated bulletin board; and

- optional use of chat rooms.

The recommendation of Starr (1997:8) that true interactivity goes beyond static Web pages and page linking to create truly interactive pages with information exchange, seems to have been fully incorporated in the WHO programme.

According to Mash (2000a: Personal Interview) he logs into the programme at least once a day and students receive feedback within 48 hours. He is a member of every discussion group and can react immediately when a message has been posted. He gives the students immediate notice of reception, reads it, reflects on it and only then provides feedback.

The importance of prompt feedback for distance education learners is also discussed in Chapter 2 paragraph 2.5.4.

Criteria 11 and 12: Study material is an indispensable element of distance education. Study material takes the place of lectures and should therefore be as learner friendly, accessible, complete and content rich as possible. The WHO programme consists of the following study materials:

   – *"getting started with your computer"*-guidelines, in print;

- printed materials in the form of desk-top tools to be used when consulting with a patient;

- a CD with video material; and

- the interactive study guide on WebCT.

The critical outcomes of the programme were stated in the interactive study guide. During the interview, Mash (2000a: Personal Interview) indicated that the critical outcomes were not explicitly stated and indicated this could be an area for improvement.

Outcomes are pivotal for all teaching and learning. Students should know exactly what they are supposed to know, what they should be able to do and what their attitude should be to reach the learning outcomes. Outcomes are discussed in Chapter 2 (paragraph 2.4.2.) of this study.

Having access to resources is a need for all distance education learners. For the WHO programme the library was internalised (Mash, 2000a: Personal Interview and Janse van Rensburg, 2000: Personal Interview). The students have access to four on-line books (in Adobe Acrobat). Dr Mash negotiated and contractually agreed with the publishers on electronic rights. Two other books were mailed to the students and an additional two books were available in hardcopy at a reduced price via a hyperlink with the publishers (Mash, 2000b: no page numbers).

Criterion 14: All the information mentioned in the benchmark was given to the students in the marketing leaflet and/or on-line (Mash, 2000a: Personal Interview and marketing leaflet for WHO programme). Giving students all the information they might need as well as supporting them, are essential support mechanisms in distance education. (See the Needs of Distance Education students in Chapter 2 paragraph 2.5.4.)

Criterion 20: Since this criterion has a double focus, it was already discussed in Table 4.4A.

TABLE 4.4C :

CRITERIA APPLICABLE TO THE WHO PROGRAMME AND SYSTEMS NOT AVAILABLE/NOT IN PLACE AT THE US

1.	A documented technology plan that includes electronic security measures (i.e. password protection, encryption, back-up systems) is in place and operational to ensure both quality standards and the integrity and validity of information
3.	A centralised system provides support for building and maintaining the distance education infrastructure
5.	Instructional materials are reviewed periodically to ensure they meet programme standards
10.	Before starting an on-line programme, students are advised about the programme to determine (1) if they possess the self-motivation and commitment to learn at a distance and (2) if they have access to the minimal technology required by the programme design
13.	Academic staff and students agree upon expectations regarding times for student assignment completion and academic staff response
16.	Throughout the duration of the programme, students have access to technical assistance, including detailed instructions regarding the electronic media used, practice sessions prior to the beginning of the programme, and convenient access to technical support staff
18.	Technical assistance in programme development is available to academic staff, who are encouraged to use it
19.	Academic staff members are assisted in the transition from classroom teaching to on-line instruction and are assessed during the process
22.	The programme's educational effectiveness and teaching/learning process is assessed through an evaluation process that uses several methods and applies specific standards
23.	Data on enrolment, costs, and successful/innovative uses of technology are used to evaluate programme effectiveness

Criterion 1: Currently no such documented technology plan is in place at the University of Stellenbosch, but it is a priority (Van der Merwe, 2000: Written Commentary). An E-Campus strategy document is currently being drafted by academic and professional staff at the US to address this benchmark (Institutional Plan, 1999:2).

Criterion 3: The designer of the WHO programme mentioned that he had a lot of conceptual confusion in his mind about who was doing what and whom he should approach for help. It seems as if all the systems are in place but that communication is a problem. The designer had to find out a lot of things by trial and error (Mash, 2000a: Personal Interview).

Because this programme was marketed as a certificate programme, the US Administrative Department could not be involved. Students enrolling for certificate programmes usually do not complete an official form for admission and subsequently do not get a student number - no record is therefore held of these students. However, if the Department of Family Medicine communicated with the Administrative Department well in advance, the Magister in Family Medicine could have been registered as a programme and the WHO students could have been registered as special students doing a module of the Magister programme. In that case all the administration would have been done by the Distance Education Administrative Department and subsidy could have been earned (De Klerk, 2000, Personal Interview). Because of this situation, the administrative officer of the DDE also were not involved with the WHO programme (Combrinck, 2000: Personal Interview). According to Janse van Rensburg (2000: Personal Interview), this was the case: *"Because this programme was a 'first' in quite a lot of ways, we all had to find our way and put systems in place"*.

Criterion 5: No formal system is currently in place for the periodical review of instructional materials to ensure that they meet the programme standards. This issue needs urgent attention in the light of paragraphs 2.2.1 and 2.2.2 in Chapter 2.

Criteria 10 and 13: Students enrolling for a distance education programme for the first time usually do not have any prior experience of learning at a distance. Determining the self-motivation and commitment of students could give an indication to both the students and the institution if students will succeed. This is not currently done at the US. Whether this will be done in future is also not clear, (De Coning, 2000: Personal Interview) because the US Distance Education

Division focuses on postgraduate students and these students are perceived as willing to take responsibility for their own learning.

In the advertising materials of the WHO programme, the programme requirements were stated explicitly, but, on the advice of the DDE Director, the specific technology requirements for the programme were deliberately not stated, because they did not want to turn students away before they registered. The students were however informed that they would need access to the Internet (Mash, 2000a: Personal Interview and marketing leaflet for WHO programme).

Both these benchmarks could be aiming at the implementation of learning contracts. A learning contract is defined by Rothwell and Kazanas (1992:216) as an alternative way of structuring learning experiences. It replaces the content plan with a process plan. Instead of specifying how a body of content will be transmitted by the educator, it specifies how a body of content will be mastered by the learner. Such a contract should specify the outcomes, the learning resources and strategies, the target date for accomplishment, what evidence should be produced to demonstrate that the outcomes were accomplished and how this evidence will be assessed.

In the case of the WHO programme, there were no hard and fast deadlines for student assignments or educator feedback. The designer did however commit himself to prompt feedback and responses. On the programme homepage an indication was given of the scheduling of the reflective journals to pace students through the allotted 18 weeks. Students were informed of all deadlines and cut-off times right from the start of the programme. Halfway through the programme students again received an electronic warning about the final deadlines. Because the WHO programme is aimed at postgraduate general practitioners it was assumed that the students would take responsibility for their own learning. The programme was therefore based on adult learning principles as discussed in Chapter 3 (paragraph 3.5.2).

Criterion 16: In the Introductory WebCT module of the programme, the designer included a number of practical exercises to provide practise in all the skills needed by the students (Mash, 2000b: no page numbers). For the duration of the programme the designer himself was, in his own words, "... *doubling up as technical support, programme organiser, administrator, teacher, friend and benefactor as well as evaluator!*" (Mash, 2000a: Personal Interview). Neither Uni-Ed nor IT has the capacity to help with any of these tasks on a full time basis. In

spite of this lack of capacity, the WHO programme was designed, developed and implemented without any major problems.

Criteria 18 and 19: Uni-Ed adopted a philosophy of *"teaching them to fish"* (Van der Merwe, 2000: Written Commentary). This implies that academic staff are empowered to design and develop their own on-line materials and therefore have ownership of their programmes. Uni-Ed provides the initial training and thereafter support is given on a one-to-one basis. Whether it can still be done this way is not clear. This way of working could be problematic in future if more than one on-line programme is designed and developed simultaneously, because there might not be sufficient capacity within Uni-Ed.

The design and development of the WHO programme was a single assignment, and Uni-Ed and HUMARGA were capable of helping the principal designer whenever a problem or need appeared. Although the principal designer had access to help whenever needed, it was still a trial and error issue, because he did not realise what he did not know and had to learn along the way (Mash, 2000a: Personal Interview).

Support at Uni-Ed includes assisting educators with the transition from classroom to on-line instruction, because it could imply a *"paradigm shift"* for most educators. For Mash (2000a: Personal Interview) this was a major problem. He had to learn a lot through trial and error and it was not so much a change in educational and teaching principles, but more in how structuring and writing materials for the WWW are done. The whole planning of the programme was also different from what he was used to for residential programmes.

The assistance of educators to make a *"paradigm shift"* seems to be a very important aspect in order to enhance the quality of on-line higher education. This issue was discussed in Chapter 2, paragraph 2.4.5.

Criteria 22 and 23: No formal evaluation strategy for the evaluation of on-line programmes is in place at the US. In the Institutional Planning document (1999:2) however, the University commits itself to a system of compulsory student feedback and educator evaluation as well as a system for the external assessment of departments. De Coning (2000: Personal Interview) indicated that he also wanted to submit all US distance education programmes to SAIDE for assessment. This was told to designers of all programmes to allow them time to ensure that their programmes satisfied the standards as laid down by Uni-Ed.

The adaptation, design, delivery and evaluation of the WHO programme forms part of another research project. The evaluation strategy that Mash plans to implement will include the reflective student journals as qualitative data to be analysed and interpreted. The results of this analysis and interpretation will be validated by triangulation, respondent validation and peer review. According to Mash (2000b: no page numbers) triangulation will involve collecting additional qualitative data from interviews with all the participants. Respondent validation will be an ongoing activity as the journals from the students are marked. Peer review will be done by an independent research consultant who will audit the process of analysis and interpretation.

Cost effectiveness is very important when assessing on-line teaching and learning. The question most often asked by educational administrators is how resources of people and capital could be organised in ways that will produce good results at the lowest cost (Moore & Kearsley, 1996: 71). The following aspects are proposed by Batey and Cowell (in Moore & Kearsley, 1996:74) to be included in any evaluation of costs:

- determination of overall costs;

- component costs;

- per student costs;

- determination of the cost of alternative delivery methods;

- a record of all cost data, including *"already paid for"* costs; and

- relating of costs to educational gains.

The first implementation phase of the WHO programme was heavily subsidised by the US, the Department of Family Medicine and the DDE (Mash, 2000a: Personal Interview). Mash indicated that the costs and enrolment fees should be more in agreement when the programme is presented in future. The evaluation of the programme has already been discussed in benchmark 22.

4.5 SUMMARY

The application of the results indicated that five benchmarks were not applicable to the WHO programme. Nine benchmarks were applicable to the WHO programme and systems were available and in place during the design, development and implementation

of the programme. Ten of the benchmarks could not be applied to the WHO programme because the necessary systems were either not available at the US or not available for the WHO programme, due to reasons discussed above, or not yet in place at he US at the time of designing, developing and implementing the WHO programme.

In this chapter, the results of the qualitative case study were reported and an analysis of the data was performed. The analysed data was presented in 4 categories: benchmarks not applicable, benchmarks applicable and systems in place, benchmarks applicable and systems not in place and systems that need to be addressed by the University of Stellenbosch. The next chapter will provide conclusions and recommendations of the study based on the analysed data.

Chapter 5

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1   DISCUSSION

The purpose and focus of this study was to apply 24 benchmarks for quality on-line distance education to the WHO Mental Health Disorders in Primary Care programme, in order to determine the applicability of these benchmarks for the design, development and implementation of World Wide Web (WWW) programmes at the University of Stellenbosch.

The Division for University Education (Uni-Ed) at the University of Stellenbosch, of which the researcher is a member, is responsible for quality standards of teaching materials. Currently, no formal criteria for on-line programmes are in place at the institution. This study is therefore aimed at determining the applicability of these 24 international benchmarks to this specific context.

The following important perspectives, issues, elements and lessons came to the fore in the different chapters of this study:

From the information in **Chapter 1,** it became clear that the US commits itself to *"…quality teaching, the ongoing renewal of teaching programmes and the creation of effective learning and studying opportunities."* One of the results of this commitment was that the Task Group for Learning and Teaching (TGLT) was constituted in 1999. The tasks of the workgroup were formulated as follows: the development of an institutional strategy for teaching and learning at the US for the next two to four years; the development of a teaching and learning strategy for each faculty and to play a key role in the implementation of these strategies. The implementation of WebCT as a technology platform for the delivery of on-line programmes and the rapid growth it experienced appear to be important initiatives for the US towards its commitment.

The literature review in **Chapter 2** of this study highlighted a number of important issues. Firstly, the issue of *quality higher education* was discussed. It is clear that quality in

higher education relies on assessing services and products against set standards, with a view to improvement, renewal or progress. Further, the design, development and delivery of quality teaching to ensure quality learning in higher education is not negotiable. To ensure that quality is the password, the establishment of organisational and administrative infrastructures for the efficient and effective development, management, execution and assessment of on-line distance education programmes is inevitable.

Secondly, Chapter 2 highlighted teaching and learning in the "new paradigm". Programmes should aim to stimulate students to become enquiring, analytical and creative learners, while encouraging independent judgement and critical self-awareness. Student-centred learning and teaching should be the aim of all programmes and a deep approach towards learning should be stimulated. The advantages of constructivist learning environments were discussed and it was stated that these environments are most effective for advanced knowledge acquisition. This advanced stage of learning is most consistently required in universities. Therefore universities are among the most appropriate venues for implementing constructivist learning. As part of constructivist learning environments, learning opportunities where students are helped to learn with and from each other (collaboratively and/or co-operatively) should be designed because for this type of learning, the result as a whole can be greater than the sum of its parts. Educators should also ensure that their teaching is based on interaction between the educator and the student(s) as well as among the students themselves. When students feel part of a learning community they are more likely to be motivated to seek solutions to their problems and to succeed.

A third important issue that became evident from the literature study is that technology can and should support advanced knowledge acquisition. Technology-based learning environments should fulfil the need of the learner for information or knowledge construction. For technology to support learning it should focus on information content, learning challenges and learning support. To ensure quality on-line programmes, academic staff should be trained and evaluated in methods of effective on-line distance teaching. They should, among other issues, be told about the importance of the instructional design process for the design and development of quality on-line programmes. The formulation of the outcomes for any programme should be stressed as it provides the foundation for the design, development, delivery and assessment of an educational event.

A fourth aspect which was discussed in Chapter 2 is the needs of different learners. The diversity of potential learners should be taken into account when designing distance education materials. Adult learners' unique characteristics should be taken into account when designing and developing materials. Due to the uniqueness of distance education, the distance education student also has very specific needs. Support for the distance education student is a life line and should include methodological, metacognitive, motivational and administrative issues.

In **Chapter 3** the research strategy of this study was discussed. A qualitative instrumental case study was selected as research strategy because a particular case was examined to provide insight into the applicability of the 24 benchmarks for quality on the line as published by the Institute for Higher Education Policy in the USA. The case was of secondary interest and played a supportive role in facilitating understanding of the unit of analysis. The selection of the case was made because it had to advance understanding of the applicability of the 24 benchmarks to the current US context.

In-depth, semi-structured interviews based on the 24 benchmarks were conducted with all parties involved in the design, development, implementation and assessment of this programme. The results were then reported and analysed.

In reflection on the selection of the case for this study, using the WHO programme might not have been a very good choice. This programme was a *"first"* in many instances and therefore the benchmarks were not always applicable and all the necessary systems were not in place at the time. This was due to a variety of reasons as discussed in Chapter 4. Because of the fact that systems were not in place and the WHO programme was not administered through the DDE, the information gained from some interviews was restricted.

The involvement of the researcher in the design and development of the programme made it difficult to remain objective and neutral at all times. Being part of the design team was originally one of the researcher's reserves, because she did not want to assess *"somebody else's work"*, but would rather critique on her own work. In the end it did not prove to be a wise decision, except for the fact that first hand experience and insight could be recorded.

The analysis of the results in **Chapter 4** indicated that a number of the benchmarks were not applicable to the WHO programme. However, some benchmarks were applicable and the necessary systems were in place at the US to ensure that the WHO programme could

utilise them. Another group of benchmarks were applicable to the WHO programme, but the supporting systems were not in place at the time and alternative plans had to be made by the designer while designing, developing and implementing the WHO programme. Following this indication of systems not in place, the researcher indicated in paragraph 5.3 (Recommendations) which systems should be addressed by the University of Stellenbosch in order to apply the 24 benchmarks for quality on-line distance education.

5.2   CONCLUSIONS

From the literature review of this study it was possible to draw a number of important conclusions.

Firstly, it can be concluded that constructivist principles benefit the design and development of distance education materials. In Chapter 2 the benefit of the constructivist theory as a point of departure for on-line distance education was discussed. Knowledge and therefore learning is seen as constructed by interactions of individuals. These interactions usually take place among the learner, the educator and the content. Educational communication should facilitate the construction and negotiation of meaning, should be explananatory and should have an interactive component. All these fundamental characteristics of constructivism make this theory ideally suitable for on-line distance education.

Secondly, the benefit of well designed and developed on-line distance education programmes became clear. Starting with constructivism as a theoretical point of departure, specific requirements for the design and development of on-line materials were discussed in Chapter 2. On-line documents may save time and paper, but they cannot substitute materials that have been designed specifically to provide instruction in an on-line environment. Sound instructional design needs to be the focus of on-line programme designers. As Rowntree (1990:11) stated: distance education materials should support all the functions a teacher would execute in a classroom situation: guiding, motivating, intriguing, expounding, explaining, provoking, reminding, asking questions, discussing alternative answers, appraising each learner's progress and giving appropriate remedial or enrichment help.

Thirdly, the benefit of the congruency between WWW teaching and learning and constructivist principles was pointed out. The researcher designed a congruency table showing the relationship between WWW (WebCT) learning and constructivist principles

(Annexure E). From this table it can be concluded that quality teaching via the WWW can successfully incorporate constructivistic principles. WebCT has very specific characteristics, such as access to a number of resources, around the clock availability, possibilities for open learning, richness of communication strategies and assessment facilities, to name but a few. When well-designed teaching materials are developed according to sound instructional design principles and according to the theory of constructivism and are delivered to distance education students they combine the elements that ensure quality higher education.

Fourthly, the benefit of the congruency between adult learning needs and the principles of constructivism was highlighted. A congruency table indicating how adult learning needs relate to the principles of constructivism was produced (Annexure F). The conclusion is that constructivism is a suitable theoretical foundation for the design of programmes for adult learners. Adult learners are independent, goal centred, active learners whose motivation for learning is based on experience, problem solving and application. All these characteristics are addressed by constructivist learning principles such as focus on learning not teaching, active learning, problem solving and critical thinking, collaborative and co-operative learning and experience.

Fifthly, and lastly, the benefit of distance education via the WWW (WebCT) was indicated. A clear benefit that emerged in the literature review in Chapter 2 is that distance education students can benefit from learning via the WWW (WebCT in this particular case). Distance education has a certain uniqueness about it and distance education students also have very specific needs: they have a need for contact with educators; they need someone to provide assistance; they want to be assured of personal interest and they need encouragement from their educators. Furthermore they want to be able to convey general study problems, as well as personal and social problems; they want interaction; they sometimes need remedial aid and they want prompt feedback about their progress. Peer group comparison and self-assessment are also important to distance education students. Individual students' needs should be addressed and support should be available as often as needed. If the characteristics of WebCT are compared to these needs, it becomes clear that all these needs can be addressed with technology.

From the analysis of the results of this study in Chapter 4 it was concluded that some of the benchmarks for quality on-line education are *not applicable* to the current University of Stellenbosch context. This is due to the fact that certain systems were not in place at the US when the WHO programme was designed, developed and implemented.

5.3   RECOMMENDATIONS

From the analysis of the results of this study and the conclusions drawn, the following ten recommendations were identified, bearing in mind that problems could be attributed to systems not available during the design, development and implementation of the WHO programmes. They need to be addressed by the US should the university wish to apply the 24 benchmarks in future:

The E-Campus policy document should be finalised to serve as a technology plan for the US. (Refer to Criterion 1 of the benchmarks).

> The E-Campus Forum, consisting of managers from the different divisions involved in the planning of an E-Campus for the US, is drawing up this policy document as a matter of urgency. They plan to finalise the document by January 2001 and have it approved by Senate by April 2001. A number of uncertainties currently in the minds of US staff about on-line teaching and learning will be addressed and clarified with the publication of this policy document.

Policies and procedures for the assessment of on-line programmes should be put in place.

> Policies and procedures for the design, development, implementation and assessment of on-line programmes will be addressed in the E-Campus document.

A questionnaire for prospective students should be developed to determine if they possess the self-motivation and commitment to learn at a distance.

> Determining whether students are motivated and ready for the demands of studying at a distance, will be of great help for both the prospective student and the institution. Students will know what will be expected of them, while the institution could get an idea of the quality of the students who want to apply. Implementing this type of questionnaire at the US, will indicate to prospective postgraduate students, who in most cases do not have any distance education experience, if they will be able to balance all the demands of study, work and family.

The implementation of learning contracts could be considered.

> As described in Chapter 4 of this study, a learning contract specifies the outcomes, the learning resources and strategies, the target date for accomplishment, the evidence that should be produced to demonstrate that the

outcomes were accomplished and the way in which this evidence will be assessed. By implementing learning contracts between students and educators, both parties take part in the decision making and take responsibility to adhere to the agreement. For the US, the implementation of learning contracts for distance education students will be of great help. Currently, distance education students are stretching the system and almost always ask for extension of deadlines. When learning contracts are in place from the very beginning, this problem will be eliminated, because everybody knows what is expected from the outset.

The support staff and systems for on-line students should be expanded.

In the case of the WHO programme, the designer also supported the students with all their questions. At the DDE an administrative enquiry system is in place. However, there is no technical support desk in place to handle student queries. This is an important need to be addressed if the US wants to deliver quality on-line programmes.

The support staff and systems for the designers of on-line programmes should be expanded.

Currently, the support staff for designers of on-line programmes consist of only two members at Uni-Ed. Because on-line distance education programmes up to the present, have mostly been designed by individual "lone rangers", the two persons could provide the necessary support. If the US however "markets" the use of WebCT as part of the E-Campus initiative, the expansion of the support staff is inevitable.

Academic staff should be able to attend workshops to assist staff with the transition from designing, developing, delivering and presenting residential programmes to the design, development, delivery and presentation of on-line programmes.

The above recommendation is discussed together with the following:

Guidelines for the planning, structuring and writing of on-line programme materials should be developed.

At the moment, the staff at Uni-Ed provides this guidance when consulting with designers on a one-to-one basis. Educators interested in using WebCT attend two three-hour workshops explaining and demonstrating the functionality of WebCT. Educators who want to continue with the design and development of their programmes on the line, then contact Uni-Ed and individual sessions are

organised. The need for more comprehensive training, training notes and guidelines was proposed by a number of US staff members currently using the WebCT system. Putting these in place will also be a way of ensuring quality on-line distance education.

Policies and procedures for the assessment of the educational effectiveness of on-line programmes should be put in place.

The current US policy addresses the assessment of the educational effectiveness of residential programmes. Because the US is currently examining the possibility of an E-Campus, this policy should be extended to include on-line programmes. Similar measuring instruments should be developed and used.

Policies and procedures for the evaluation of the cost effectiveness of on-line programmes should be put in place.

Cost effectiveness of on-line programmes is an important issue in higher education. The cost effectiveness of programmes should be calculated by using a variety of figures. The DDE at the US heavily subsidised the WHO programme for this first experimental implementation. The necessary calculations should be made to ensure that the delivery of this programme is more cost effective in future. The delivery of quality on-line distance education programmes is supposed to be highly cost effective.

In conclusion, the researcher strongly recommends that the necessary systems be put in place at the US to ensure that the 24 international benchmarks can be applied. This would lead to international compliance of the on-line courses designed, developed and implemented at the US.

5.4 PROPOSED TOPICS FOR FURTHER RESEARCH

Since this research only touched on a minute aspect of this new world of technology in higher education, the researcher proposes that the following further studies be undertaken on this topic. At the University of Stellenbosch, researchers could determine the applicability of the 24 benchmarks to other on-line programmes. Developing guidelines for the designers of on-line distance education at the US, to ensure that the 24 benchmarks can be applied, could be another possible area of research. If the US decides not to address the necessary systems to be able to apply the 24 benchmarks, further research should be undertaken to compile a set of unique benchmarks for on-line

distance education programmes at the US. It could also be interesting to see the results should other South African institutions of higher education determine the applicability of the 24 benchmarks to their contexts.

This study started with a quote from Rossman (1993:7) stating that significant changes are taking place in higher education. These changes are the result of the continuous improvement of technology, growing population numbers and socio-economic factors. In order for institutions of higher education to remain competitive they should explore innovative ways of providing quality education without brick and mortar. The implementation of on-line distance education seems to be a strategy being implemented by many higher education institutions. To ensure the delivery of quality distance education graduates, these institutions should implement quality distance education programmes that are continuously assessed and comply with international standards.

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CRITERIA FOR THE EVALUATION OF SOFTWARE FOR A STUDENT MANAGEMENT SYSTEM

1.   LEARNING AND LEARNER CENTREDNESS

1.1   Intuitive user interface (easy to use)

- Orientation – web site structure

- Descriptive links (bullets, hypertext links, graphics, etc)

- Continuous guidance/instructions

- Consequent and clear page layout

- On-line help

1.2   Functional navigation (simple and effective)

- Bookmark facility

- Sitemap

- Search engine

- Hypertext links

- Annotation facility

- Frames

1.3   Off-line facility

- Static study material available off-line on hard disc/CD-ROM

- Alternative distribution from source document

- Off-line access to multi-media components (CD-ROM/hard disc)

- Will you be able to download the programme material?

- Download formats

1.4 **Easy communication (student-educator, student-student, and group communication)**

- Availability of full text in e-mail and chat forums

- Availability of synchronous chat facility

- Student homepage facility, own homepage

- Syndicate groups facility

1.5 **Evaluation (monitor own progress)**

- Self assessment

- Product's own facility/Question Mark (Nature and scope of evaluation items)

- Integration with external facility

- Grading facility with real-time management

1.6 **Foolproof submission of assignments**

- Own facility

- Generic formats

1.7 **Constructivist elements/learner control**

2. **LECTURE-FRIENDLINESS (USER FRIENDLINESS)**

2.1 **Intuitive user interface (easy to use)**

- Accommodate novice as well as expert users

- Orientation – web site structure and design environment

- Descriptive links (bullets, hypertext links, graphics, etc)

- Continuous guidance/instructions

- Consequent and clear page layout

- Nature of interface (Elegant, Lean)

- Separate web windows (spawn)

2.2 Use standard, familiar tools for development

– Campus standards

– Manage different Hyper-/ Multimedia formats

2.3 Support flexibility in terms of instructional design

– Accommodate own/unique curricula model

2.4 Text in user interface adaptable concerning language/terminology

2.5 Easy communication (educator-student, educator-group communication)

– Automatic classification and canalisation of e-mail

– Management of e-mail sent (automatic sent to the correct forum/educator)

– Integration with Internet e-mail systems (also with correct student ID's)

– FAQ facility

– Archiving and search of chat forums

– Administration of chat forums

2.6 Limited support to educator/developer in terms of maintenance and delivery of programmes/programme units

– No/little HTML pre-knowledge required for educator/developer

– HTML and Java/JavaScript input facility

– Effective On-line Help

2.7 Relative easy/simple micro-administration (grouping of students, moderation of chat forums, assignments, administration of marks)

– Easy input/output of data

– Gradebook

– Batch upload and download of programme content/programme objects

– Batch upload and download of marks

– Manage different file formats (MPEG, WAV ....)

– Monitoring student activities

– Monitoring programme users frequency

– Monitor student progress (tracking)

– Mastery learning facility and control (eg. Student may only continue with the next lesson if the previous lesson has been completed)

– Reporting student progress

3. CONFORM TO IMS/CERTIFICATION BY IMS (MEDIUM TERM POTENTIAL)

Variety reasons

3.1 Possible exchangeability/re-usability of learning objectives

3.2 Protection of investment in development

– Supply viewer or link to packaged programme material from old environments

3.3 Possible upgrades

4. INTEGRATION WITH LOCAL INFORMATION ARCHITECTURE

4.1 Transparent integration with Unikom-system

– Functional input-output facility should be available

– Automatic transfer of data from and to the product

– Learners should be administered easy and centrally according to the University- and statutory requirements

– Class list information should be updated centrally and/or should be updated by the educator

– Administration of marks should be updated by the educator of central student administration

4.2 Integration with document management of the University

– Version control

– Predefined access to source documents

– Way in which source documents are managed

– Central controlled storage, administration and back-up of learning objectives

4.3 Transparency of electronic communication

– One mail address per educator/student, preferably with integrated electronic diary system

– Standard e-mail (eg. SMTP)

– Does the package have its own e-mail system

– Is the own e-mail system open standard

– Could open-standard e-mail package integrate with the package

4.4 Reliable and manageable security

– Well defined read and write rights

– Access to learner component of student management system only for present, registered students for relevant programme units as defined by the class list

– Marks and evaluation system with high integrity/reliability

– Automatic/adjustable log-off facility

– In developing mode is it possible to switch between educator and student view

4.5 Adjustable functionality

– Should be able to handle control elements (eg. Registration modules)

5. AFFORDABILITY

5.1   Client software should be affordable

5.2   Cost effective support of total environment necessary

5.3   License prerequisites

- Should be annually renewable

- Should not exclude other packages

- Unicom license vs. site license vs. campus license vs. server license

5.4   Student license

5.5   Centre license

5.6   Support costs

6. SUPPLIER

- History

- Support capacity/ability

- Upgrading

- Financial strength and credibility

- Experience in Higher Education

- Disposition of supplier

7. SOFTWARE ENGINEERING

- Quality

- Upgrade path

- Management and maintenance

- Data structure

- External communication structure (eg. TCP/IP and sockets)

- Openness of source (eg. CGI script)

8. COMMENTS

- Package should be open for HTML development tools

- Necessity of HTML requirements to package (eg. Problems with FrontPage Extensions)

- Low level data transfer between work stations and central administrative system

- Specifications and protocol for testing

- Multimedia

- Editors (used by Unicom)

- Authoring packages

- Word processor packages

- External executables

Memo

Aan: Lede van die Algemene Bestuursvergadering

Van: Jan Botha, Direkteur: Universiteitsonderwys

Datum: 28 April 2000

Insake: "E-leer" aan die US: aspekte van die huidige situasie

Hiermee bring ek graag inligting ten opsigte van aspekte van die huidige gebruik van die rekenaar en die internet in leer en onderrig aan die US onder u aandag.

BYLAE A bevat die lys kursusse en dosente wat tans gebruik maak van die internet kursusbestuurstelsel WebCT in hulle leer- en onderrig-aktiwiteite asook die getal studente wat daarby betrokke is. BYLAE B bevat die lys van dosente wat reeds by Uni-Ed opleidingsessies in WebCT voltooi het.

Ter toeligting die volgende:

1. Die syfers in BYLAE A dui die aantal studente per kursus aan. Daar is studente wat meer as een kursus op hierdie wyse volg. Die oorvleueling is egter redelik gering en die totale koppetelling sal waarskynlik nie veel verskil van die totaal in BYLAE A nie.

2. Die bykans 5000 (vyf duisend} studente wat tans van WebCT gebruik maak, omvat die volgende groepe:

   - 18 is slegs afstandsonderwysstudente (die kursus "Introduction to Ancient Near Eastern Cultures") word volledig by wyse van die internet en slegs aan afstandsonderwysstudente aangebied,

   - 95 is gedeeltelik residensieel en gedeeltelik afstandsonderwys. (Dit geld ten opsigte van die tien kursusse wat deur Departement Meganiese Ingenieurswese met WebCT - ondersteuning aangebied word),

   - 4826 is slegs residensiele studente. .'

3. Daar is tans ongeveer 13 000 residensiele studente aan die US. Dit beteken dat ten minste 35% van die US se huidige residensiële studente reeds van 'n gemengde modus in leer en onderrig gebruik maak: kontak-onderrig aangevul met e-leer. Hierdie syfer sal na alle verwagtinge in die nabye toekoms aansienlik groei.

4. Agt van die elf fakulteite aan die US maak op die oomblik van WebCT gebruik.

5. Hierdie syfers geld net ten opsigte van die gebruik van WebCT. Daar is ook heelwat ander rekenaargesteunde leer- en onderrig-aktiwiteite aan die Universiteit. Dit sal die syfer opstoot tot aansienlik meer as 35%.

6. WebCT verskil van die tradisionele rekenaargesteunde onderrig in die sin dat WebCT in 'n internet-omgewing funksioneer. Dit beteken dat studente toegang tot die leermateriaal en kommunikasiemoontlikhede met mekaar en met dosente verkry in die RGA's op die kampus, in hulle koshuiskamer of woonplekke, of waar hulle ook al in die wêreld is.

7. Die internet-fasiliteit maak van WebCT 'n besonder kragtige hulpmiddel vir leer en onderrig. Volledige multimedia-moontlikhede (beeld en klank} is beskikbaar, tesame met direkte en lewendige kommunikasie tussen dosente en studente en studente onderling - en dit alles "enige tyd, enige plek." Die stelsel bied verder die volle spektrum eienskappe van kursusbestuur: die afneem en rekenaarmatige nasien van toetse, bygehoue klaslyste, puntestate, kontrole oor individuele studente se aktiwiteite in die kursus en so meer .

Aktiewe kursusse in WEBCT (soos op 28 April 2000)

Aktiewe kursusse		
Kursus	**Studente**	**Dosent**
Air-conditioning and Refrigeration A744	8	Mimi Westdyk
Anatomy	14	Ben Page
Antieke Kulture	52	Pierre Venter
Antieke Samelewings	50	Pierre Venter
Biochemie 214	305	Edward Foster
Chemie B134	376	Hanelie Adendorff
Chemistry B134	198	Gavin Blewitt
CPD Research	11	Christina Strydom
Dentistry 1	44	Christina Strydom
Design for Manufacturing 714	7	A.H. Basson
Die Bybel in die samelewing (Teol A 141)	16	JP Bosman
Difference Methods B862	15	Johan Buys/ Anneke Louw
English 178: Perspectives on Language	718	Jules Coxhill
English 278: 18th Century Poetry and Prose	280	Ralph Goodman
Financial Accounting 288	655	Stiaan Lamprecht
Food 724 Advanced Food Consumer Issues	4	Chartaine Vosloo
Gemeenskapsvoeding 376	30	Debbi Marais
Gemeenskapsvoeding 478	31	Debbi Marais
Godsdienskunde 122	126	Sandra Troskie
Grieks 178	27	Pieter Janse van Rensburg
Heat Transfer through Conduction and Convection 844	9	Thomas Harms
Honours Programmes	12	Paul Verhoeven
Industrial Heat Exchangers 714	6	Anneke louw
Ingenieurstekeninge 124	5	Gerrie Thiart
Inligtingkunde 1	134	Martin vd Walt
Inligtingkunde 3	13	Cecil Ekron
Inligtingkunde Honneurs	14	Jacob du Plessis
Introduction to Ancient Near Eastern Cultures	18	Pierre Venter
Kleding 312	22	Wilma Wagner
Lifestyle Programme	679	Peter Maree
Light Structures 714	14	NJ Theron
Linear Algebra B812	21	David Holgate
Linguistics 1	68	Jules Coxhill
Linguistics 2	44	Frenette Southwood
Lugdinamika 414	9	Gerrie Thiart
Management of Technology	57	AJ Buys
Mechanical Vibrations 714 ..	6	Dirk Pienaar
Medical Microbiology	140	Elizabeth Wasserman
Privaatreg 171 (Personereg) - Me T Naude	91	Tjakie Naude
Privaatreg 371 (Deliktereg) - Loubser	73	Max Loubser
Romeinse Reg 271 - Naude	231	Tjakie Naude
Series Solutions B832 '	14	Elmari du Toit
Sociology	167	Heidi Prozeskv
Spraakterapie en Oudioloaie	19	Ben Page
Stelsels and Seine 315	90	Ludwig Schwardt
Strength of Composite Materials 844	3	Kobus van der Westhuizen
Systems Engineering 714	13	Danie Els
Turbulent Boundary Layers 844	9	Theo van Backstrom
Variational Calculus B822	11	Marcel Wild/ Anneke louw
Viscous Flow 814	2	Peter Strachan
Voeding 152	49	Marenka Kirge
Voedseldiens 476	31	Maritha Herselman
WHO Mental Health Education Programme	31	Bob Mash
Totaal	4939	

THE 24 INTERNATIONAL BENCHMARKS FOR SUCCESS IN ON-LINE EDUCATION

Institutional Support Benchmarks

- A documented technology plan that includes electronic security measures (i.e. password protection, encryption, back-up systems0 is in place and operational to ensure both quality standards and the integrity and validity of information

- The reliability of the technology delivery system is as failsafe as possible

- A centralised system provides support for building and maintaining the distance education infrastructure

Programme Development Benchmarks

- Guidelines regarding minimum standards are used for programme development, design, and delivery, while learning outcomes - not the availability of existing technology- determine the technology being used to deliver programme content

- Instructional materials are reviewed periodically to ensure they meet programme standards

- Programme are designed to require students to engage themselves in analysis, synthesis, and evaluation as part of their programme and programme requirements

Teaching/Learning Benchmarks

- Student interaction with academic staff and other students is an essential characteristic and is facilitated through a variety of ways, including voice-mail and/or e-mail

- Feedback to student assignments and questions is constructive and provided in a timely manner

- Students are instructed in the proper methods of effective research, including assessment of the validity of resources

Programme structure Benchmarks

- Before starting an on-line programme, students are advised about the programme to determine (1) if they possess the self-motivation and commitment to learn at a distance and (2) if they have access to the minimal technology required by the programme design

- Students are provided with supplemental programme information that outlines programme objectives, concepts, and ideas, and learning outcomes for each programme are summarised in a clearly written, straightforward statement

- Students have access to sufficient library resources that may include a *"virtual library"* accessible through the WWW

- Academic staff and students agree upon expectations regarding times for student assignment completion and academic staff response

Student support Benchmarks

- Students receive information about programmes, including admission requirements, tuition and fees, books and supplies, technical and proctoring requirements, and student support services

- Students are provided with hands-on training and information to aid them in securing material through electronic databases, interlibrary loans, government archives, news services, and other sources

- Throughout the duration of the programme, students have access to technical assistance, including detailed instructions regarding the electronic media used, practice sessions prior to the beginning of the programme, and convenient access to technical support staff

- Questions directed to student service personnel are answered accurately and quickly, with a structured system in place to address student complaints

Academic staff support Benchmarks

- Technical assistance in programme development is available to academic staff, who are encouraged to use it

- Academic staff members are assisted in the transition from classroom teaching to on-line instruction and are assessed during the process

- Instructor training and assistance, including peer mentoring, continues through the progression of the on-line programme

- Academic staff members are provided with written resources to deal with issues arising from student use of electronically-accessed data

Evaluation and Assessment Benchmarks

- The programme's educational effectiveness and teaching/learning process is assessed through an evaluation process that uses several methods and applies specific standards

- Data on enrolment, costs, and successful/innovative uses of technology are used to evaluate programme effectiveness

- Intended learning outcomes are reviewed regularly to ensure clarity, utility and appropriateness

THE 45 ORIGINAL CRITERIA USED IN THE RESEARCH

Institutional Support Benchmarks

- Academic staff are provided professional incentives for innovative practices to encourage development of distance learning programmes

- There are institutional rewards for the effective teaching of distance learning programmes

- A documented technology plan is in place to ensure quality standards

- Electronic security measures are in place to ensure the integrity and validity of information

- Support for building and maintaining the distance education infrastructure is addressed by a centralised system

Programme Development Benchmarks

- Distance learning programme development should be approved through a broad peer review process

- Guidelines exist regarding minimum standards for programme development, design and delivery

- Programme design is managed by teams comprised of academic staff, content experts, instructional designers, technical experts, and evaluation personnel

- During programme development the various learning styles of students are considered

- Assessment instruments are used to ascertain the specific learning styles of students, which then determine the type of programme delivery

- Programmes are designed with a consistent structure, easily discernable to students of varying learning styles

- The technology being used to deliver programme content is based on learning outcomes

- Instructional materials are reviewed periodically to ensure they meet programme standards

Teaching/Learning Benchmarks

- Student interaction with academic staff is facilitated through a variety of ways

- Student interaction with other students is facilitated through a variety of ways

- Feedback to student assignments and questions is provided in a manner that is constructive and non-threatening

- Programmes are separated into self-contained segments (modules) that can be used to assess student mastery before moving forward in the programme

- The modules/segments are of varying lengths determined by the complexity of learning outcomes

- Each module/segment required students to engage themselves in analysis, synthesis, and evaluation as part of their programme assignments

- Class voice-mail and/or e-mail systems are provided to encourage students to work with each other and their instructor(s)

- Programme is designed to require students to work in groups utilising problem solving activities in order to develop topic understanding

- Programme materials promote collaboration among students

Programme structure Benchmarks

- Students are provided with supplemental programme information that outlines programme objectives, concepts and ideas

- Specific expectations are set for students with respect to a minimum amount of time per week for study and homework assignments

- Academic staff are required to grade and return all assignments within a certain time period

- Sufficient library resources are made available to students

- Students are instructed in the proper methods of effective research, including assessment of resource validity

- Before starting the programme, students are advised about the programme to determine if they have the self-motivation and commitment to learn at a distance

- Learning outcomes for each programme are summarised in a clearly written, straightforward statement

Student support Benchmarks

- Students can obtain assistance to help them use electronically accessed data successfully

- Students are provided with hands-on training and information to aid them in securing material through electronic databases, interlibrary loans, government archives, new services, etc

- Written information is supplied to the student about the programme

- Easily accessible technical assistance is available to all students throughout the duration of the programme

- A structured system is in place to address student complaints

Academic staff support Benchmarks

- Technical assistance in programme development is available to academic staff and they are encouraged to use it

- Academic staff members are assisted in the transition from classroom teaching to distance instruction and are assessed in the process

- There are peer mentoring resources available to academic staff members teaching distance programmes

- Distance instructor training continues throughout the progression of the on-line class

- Academic staff members are provided with written resources to deal with issues arising from student use of electronically-accessed data

Evaluation and Assessment Benchmarks

- The programme's educational effectiveness is measured using several methods

- An evaluation process is used to improve the teaching/learning process

- Specific standards are in place to compare and improve learning outcomes

- Data on enrolment, costs, and successful/innovative uses of technology are used to evaluate programme effectiveness

Intended learning outcomes are regularly reviewed to ensure clarity, utility and appropriateness

CONGRUENCE BETWEEN THE WWW (WEBCT) AND THE PRINCIPLES OF CONSTRUCTIVIST LEARNING

WebCT Characteristics	Constructivist Principles (http:hagar.up.ac.za/catts/learner/lindavr/lindapg1.htm)											
	Learning not teaching	Learner autonomy and initiative	Learning is a process	Learner enquiry	Learners are creatures off will and purpose	Experience in learning	Co-operative learning	Construct new knowledge and understanding (meaning)	Active learning	Assessing performance and understanding	Problem solving and critical thinking	Involves learners in real world situations
Access to resources	*			*		*		*	*			*
"Extra" info available for faster students	*	*		*	*	*		*	*		*	
Availability: 24 hours/day 7days/week		*				*			*			*
Open learning	*	*										*
Communication Rich	*	*	*	*		*	*	*	*			*
Prompt feedback	*		*							*	*	
Remedial aid	*		*		*	*		*	*			
Assessment	*		*		*			*	*	*	*	
Search facility				*								*

CONGRUENCE BETWEEN THE CHARACTERISTICS OF ADULT LEARNERS AND PRINCIPLES OF CONSTRUCTIVIST LEARNING)

Characteristics of Adult learners	Constructivist Principles (http:hagar.up.ac.za/catts/learner/lindavr/lindapg1.htm)											
	Learning not teaching	Learner autonomy and initiative	Learning is a process	Learner enquiry	Learners are creatures of will and purpose	Experience in learning	Co-operative learning	Construct new knowledge and understanding (meaning)	Active learning	Assessing performance and understanding	Problem solving and critical thinking	Involves learners in real world situations
Active learner	*		*				*	*	*		*	*
Experience based			*		*	*			*		*	*
Expert						*	*					*
Hands on	*								*			*
Task centred					*		*		*		*	*
Problem centred	*			*	*						*	*
Solution driven					*			*			*	*
Value driven			*		*							*
Skill seeking	*			*	*	*	*	*	*	*		*
Self directing		*			*			*	*			*
Relevant to self		*		*	*			*				*
Action and Reflection	*		*	*				*		*		