

# CHAPTER 1

## Overview and orientation

### 1.1 Introduction

This thesis reports on a study conducted to investigate the design, development and implementation of a learning website as part of a distance education course comprising a combination of media and technology. The website functions as a tool for teaching distance education postgraduate adult learners mostly from previously disadvantaged communities whatever knowledge of nutrition they need to manage the symptoms and general health of people living with human immunodeficiency virus infection and acquired immune deficiency syndrome (HIV and AIDS). The study investigated factors that could serve as strategies and guidelines for the design, development and implementation of e-learning as part of effective postgraduate distance education courses for developing countries. Before ascertaining such factors, the limitations and concerns associated with the teaching and learning of the learners in question had to be established.

The course included:

- Printed study material
- An learning website
- Communication channels such as e-mail, telephone and facsimile
- Contact sessions: face-to-face and video conferencing

The learning website will be utilised primarily as a training tool for a nutrition and HIV and AIDS distance education course comprising a combination of media and technology. The website can also be used in face-to-face contact sessions and as a short course.

Results from the study were intended to lead to the integration of appropriate media and technology into the distance education Social Behavioural Studies in HIV and AIDS Honours Programme offered at VUDEC (Visa University Distance Education Campus). Before the completion of this study Vista University was incorporated into the University of South Africa, and further developments were put on hold.

### 1.2 Background

There are "... complex changes in patterns of health, disease, and mortality that result form demographic and associated economic and societal changes in a

world population that is getting older. In South Africa, however, as in many other developing countries, the African population is experiencing rapid urbanisation characterized a double burden of disease in which noncommunicable diseases become more prevalent and infectious diseases remain undefeated.” (Vorster et al, 1999:341.)

HIV and AIDS can be described as the most shattering of these undefeated infectious diseases. The HIV and AIDS pandemic is exerting increasingly devastating socio-economic effects on South Africa and many other African countries (Piwoz & Preble, 2000:9; Steenkamp, 2000:130). For years the focus on the management of HIV and AIDS was on drugs – while the relationship between nutrition and HIV and AIDS was largely ignored. The World Health Organisation (WHO) has now highlighted the important role that nutrition plays in the management of HIV and AIDS (FAO Newsroom, 2003: [Online]). In countries where poverty is severe, where malnutrition and its side effects are commonplace, and where resources, healthcare and drug therapy is expensive and not readily available or unavailable, it is increasingly widely recognised that diet and nutrition can play an important role in the health management of PLWHA (people living with HIV and AIDS) (FAO Newsroom, 2003: [Online]; Huber et al., 2000:30; Kraak, 1995:476; Steenkamp, 2000:130). Thus, for example, malnutrition and weight loss (two of the most common conditions associated with this chronic disease) have critical implications for patient treatment, the risk of developing complications, quality of life, and prospects for survival (Hyman & Kaufman, 1989:521; McMahon, 1997:31).

As increasingly effective therapies have been introduced, the life expectancy of HIV and AIDS patients has increased. This necessarily forces us to reconceptualise our understanding of HIV as a chronic disease process. Patient care is now mostly directed at health maintenance, symptom management and disease prevention (Huber et al., 2000:30; Piwoz & Preble, 2000:29). “Diet and nutrition is directly involved in patient care protocols that reflect this focus on quality of life and expanded life trajectories” (Huber et al., 2000:30).

As the HIV and AIDS pandemic grows, so has amongst others, the need for nutritional care and support. Veldman (2002:S4) states: “...nutritional care and support is an essential component of health care management for people with HIV/AIDS”. To provide nutrition counselling and support to PLWHA, workers and caregivers need to be trained in the field of nutrition and HIV and AIDS. Under such circumstances, it seemed appropriate to create a distance education course that would meet the needs of the target population who are unavailable during working hours because they themselves work during the day and/or because they live in remote rural areas. Distance education is increasingly becoming the preferred mode of learning for many learners. There is a growing need and appreciation among prospective learners, especially working adults with families, for the greater flexibility and the fewer time constraints that distance education courses offer (Carnevale & Olsen, 2003:A31; Dyrud & Worley, 2001:80; Schrum, 2002:6).

In 1998 the Sociology Department at VUDEC proposed the development of a diploma qualification in HIV and AIDS management in the workplace and the establishment of community projects related to the qualification. After this initiative, a wider interest in a learning programme in Social Studies and HIV and AIDS developed in the university. In 1999 a proposal was submitted to the University management for the development of a postgraduate qualification in Social Behavioural Studies and HIV and AIDS. Staff from the Sociology Department at VUDEC initiated consultations with various other departments at VUDEC and an NGO (non-governmental organisation) to establish an interdisciplinary working group in Social Behavioural Studies and HIV and AIDS. In 2000 the development of the honours degree programme in Social Behavioural Studies and HIV and AIDS began in all earnest. The first learners enrolled for the degree in 2001. The degree has attracted strong interest and the number of learners enrolling for the degree has increased by approximately 15 percent since 2001. But because of staff constraints and the extra teaching load that the facilitators of the course were required to bear, first-time learner enrolments had to be limited to sixty learners per year.

The purpose of the degree programme as a whole is to provide the learner with whatever skills and knowledge are necessary to understand and cope with the social behaviour aspects of HIV and AIDS. This in turn would lead to a reduction in the socio-economic impacts of HIV and AIDS. The degree programme is both integrated and interdisciplinary, and includes subject areas such as the social behavioural aspects of HIV and AIDS, supportive counselling, social behavioural research in HIV and AIDS, social responses to HIV and AIDS, nutrition and HIV and AIDS, and religion and HIV and AIDS. All the courses offered in the degree programme are outcomes-based and learners are evaluated by means of assignments (referred to in the programme as assessments) comprising theoretical questions, practice-based questions, and skills-development exercises. There are no formal examinations.

When the degree was being designed, those concerned with its development identified a need for a course that would focus on the nutritional needs of PLWHA. Since very few of the learners who enrol for the degree have any relevant nutritional knowledge, the course first had to familiarise learners with the basic facts of human nutrition before it could proceed to focus on the specific nutritional needs of PLWHA. This led to another question: What methods should be used to convey to learners the basic facts of human nutrition? Because of the peculiarities of the distance education mode of learning and the requirements of the stated outcomes of the course, and staff constraints learners had to acquire this basic knowledge of nutrition by means of self-study and at their own pace. Since the paper-based mode of offering the course has shown to be inadequate, alternative modes for conveying information were required.

For many years, distance education programmes have offered correspondence courses that rely mainly on paper-based study materials, the post, telephone calls, and, in some cases, television. The quality of interaction between lecturers and learners depended on (and was limited by) the

capacity and format of study material, assignments and telephone contact. With the advent of the Internet and e-mail, online education grew dramatically and began to provide alternative modes of delivering course content (Fender, 1999:26).

In the light of the needs that were identified and findings from the literature, it was decided to explore to what extent e-learning can be used as (1) a mode for delivering information and knowledge to learners from previously disadvantaged communities about the basic concepts of human nutrition and nutrition and HIV and AIDS – as a support for the paper-based mode of distance education at VUDEC, (2) providing an interactive and more pleasant learning experience while encouraging self-directed exploration knowledge formation and (3) provide instant access to learning content after registration.

It soon became apparent that because of the diverse backgrounds of the learners enrolled for this degree and their different circumstances (many are from previously disadvantaged communities), the other courses offered in this degree programme could also benefit from e-learning to complement their existing study material. Since the development of the e-learning nutrition course was already in progress, the developers decided (1) to use this course as a prototype for e-learning in the Social Behavioural Studies in HIV and AIDS Honours Programme, and (2) to establish the characteristics and criteria e-learning courses have to adhere to if they are successfully to accommodate the needs of learners in this specific target group.

In March 2001, the Minister of Education, Professor Kader Asmal, announced the National Plan for Higher Education. One of the proposals in the plan was that VUDEC would be incorporated into Unisa (University of South Africa) on 1 January 2004. Unisa and TSA (Technikon South Africa) would merge on 2 January 2004. The incorporation of VUDEC implied that all the departments at VUDEC would be incorporated into their corresponding departments at Unisa and that VUDEC courses would be phased out. Departments and/or programmes unique to VUDEC would therefore be offered as part of the Unisa curriculum. The Department of Consumer Science (that offered Nutrition) and The Social Behavioural Studies in HIV and AIDS Honours Programme were both unique to VUDEC.

### **1.3 Rationale for the study**

The rationale for this study is based on (1) what needs to be done to produce an effective interdisciplinary postgraduate distance education course in nutrition and HIV and AIDS aimed at adult learners from previously disadvantaged communities with limited nutrition knowledge and (2) to what extent e-learning can be used to address the limited nutrition knowledge of learners and to communicate knowledge about nutrition and HIV and AIDS while encouraging self-directed exploration knowledge formation.

### 1.3.1 Need for research

#### □ Practical needs

Public nutrition has been described as "...incorporating the social science perspective and applied, operational approach to research and education in nutrition. Public nutrition involves the integration of certain specific elements of a range of disciplines, but not all aspects of any one of them."

(Rogers, 1998:7.)

Rogers (1998:12), in her keynote address on Public nutrition, stated: "Programs could be developed to provide Public nutrition training for professionals from other fields whose work is taking them in the direction of work on nutrition problems." Rogers also indicated that there is a need in Public Nutrition Education to develop and disseminate training materials that include text, other types of materials and current communication technologies (Rogers, 1998:10-12). One of the objectives of the course on nutrition and HIV and AIDS is to provide just such a basic nutrition distance education course that comprises a combination of media and technology to first-degree graduates (or those with other relevant qualifications) from fields such as Social Science, Education and Nursing.

It has been indicated that there are no postgraduate level courses available in applied and/or community nutrition at any of the South African universities (Oniang'o, 1998:25). Prior to this study, neither Vista University nor Unisa had offered such courses by means of distance education. Oniang'o (1998:24 and 25) recommended that courses in applied and/or community nutrition, offered by means of distance education, should be developed. She also suggested that these courses should cater for first degree graduates in a number of fields including, among others, Social Sciences, Education, Nursing, Economics and Medicine.

There is also a need to provide in-service nutrition training for numerous people already working within communities. Such people are in positions in which they need nutrition knowledge but do not have it (Oniang'o, 1998:24). Because people who work in rural communities are often closely involved in the day-to-day life of the community, they are often in the best position to detect early signs of malnutrition and other health problems. With proper training, they would be able to identify problems and conditions and make suggestions about the short-term management of the condition or problem before referring the person concerned to the appropriate health professional for treatment.

In the HIV and AIDS field, community workers with basic nutrition knowledge can offer valuable information to people with no or misguided nutrition knowledge. By changing people's perceptions about food, by explaining scientifically sound dietary practices to their communities, and by assisting them to change their eating behaviour, community workers can make a valuable contribution towards improving the health and well-being of PLWHA.

The social, behavioural, psychological, economic and political aspects of HIV and AIDS are addressed by other courses offered in the degree programme and are beyond the scope of this study.

#### □ **Theoretical needs**

A preliminary literature search indicated that a small number of international e-learning nutrition courses are available on the Internet, although the quality of these courses is not known (Attström & Larsson, 2002:S5). In spite of the opportunities and challenges that the www (World Wide Web) provides for delivering nutrition education, it appears that information technology (IT) is still underutilized in this field (Kolasa, 2002:S9). Nutrition educators in developing countries are only now beginning to utilize online applications (Sigot, 2002:S23). Although it is acknowledged that the teaching of nutrition depends on interdisciplinary approaches, and that IT can serve as a tool to integrate it into various medical disciplines (Attström & Larsson, 2002:S5), limited research was available that investigates the integration of basic nutrition and health education into other non-medical disciplines at post-graduate level. No research could be found on e-learning, especially on the (www), that had either investigated or described the relationship between public nutrition and HIV and AIDS education offered by means of distance education. The available tertiary level courses are mostly designed for medical and dietetic learners where it complements the formal instruction.

Most of the research dealing with nutrition education at tertiary level covers issues relating to the teaching of clinical nutrition and the use of computer-assisted learning (CAL) and computer-assisted instruction (CAI) where it complements the formal instruction and teaching of nutrition learners. In a small number of instances, distance education is mentioned (Ogle, 2002:S10; Shah, George & Himburg, 1999:[Online]; Wenhold, Wolmarans & Nordhoff, 2002:S17).

### **1.4 Research problem and questions**

This study is concerned with the factors and constraints that need to be considered when utilising e-learning and the Internet to train learners in the field of nutrition and HIV and AIDS, and with devising possible solutions – with special reference to the implications of implementing a learning website and introducing other media and technologies to support the paper-based course in a way that will meet the needs of distance education adult learners from developing countries.

The main research question is:

*What factors and constraints need to be considered when designing, developing and implementing a distance education course comprising a combination of media and technologies for the effective teaching of nutrition and HIV and AIDS at a South African distance education university?*

A number of sub-questions emerging from the central problem needed to be addressed. The categories and questions are tabulated in Table 1.1 below.

Table 1.1: Research Questions

Issue	Question
Pressures on South African distance higher education institutions, and Internet and computer technology as a solution	<p><b>Question 1</b> What pressures are put on South African distance higher education institutions to provide postgraduate flexible learning to adult learners from previously disadvantaged communities?</p> <p><b>Question 2</b> How can e-learning and the Internet be implemented in such a way so as to add value to a distance education postgraduate course in nutrition and HIV and AIDS?</p> <p><b>Question 3</b> What constraints hinder the utilization of e-learning and the Internet in the distance education nutrition and HIV and AIDS course?</p>
Interface design	<p><b>Question 4</b> What interface design principles would best facilitate the communication of nutrition and HIV and AIDS knowledge to adult learners from previously disadvantaged communities?</p>
Web usability	<p><b>Question 5</b> To what extent does general web usability principles contribute to the communication of nutrition and HIV and AIDS knowledge to adult learners from previously disadvantaged communities?</p>
Utilisation of a combination of media and technology	<p><b>Question 6</b> What theoretical perspectives and adult learner perceptions play a role in the acceptance and utilisation of the Internet and e-learning as training tools?</p> <p><b>Question 7</b> What media and technology are best suited for delivering distance education and what are the advantages and limitations of these modes for the delivery of distance education to adult learners from previous disadvantaged communities in the field of nutrition and HIV and AIDS?</p> <p><b>Question 8</b> How should a distance education course that comprises a combination of media and technology be designed and developed so that it will be effective in training adult learners from previously disadvantaged communities?</p>

Table 1.1 listed the eight sub-questions that emerged from the central problem.

A number of hypotheses concerning the central problem were formulated and needed to be tested. The categories and hypotheses are tabulated Table 1.2 below.

Table 1.2: Research hypotheses

Issue	Null-Hypothesis
Internet and computer technology	<ul style="list-style-type: none"> <li>• There is no difference in the proportion of learners 29 years and younger who view themselves as computer literate when compared with the proportion of learners who are 30 years and older.</li> <li>• There is no difference in the proportion of male learners who view themselves as computer literate when compared with the proportion of female learners.</li> <li>• Fifty per cent of the learners viewed themselves as computer literate.</li> </ul>
Interface design	<ul style="list-style-type: none"> <li>• Fifty per cent or less of the learners found the visual presentation of the screen display acceptable.</li> <li>• Fifty per cent or less of the learners found the font size readable and acceptable.</li> <li>• Fifty per cent or less of the learners found the graphics effective and clarified the content.</li> </ul>
Web usability	<ul style="list-style-type: none"> <li>• Fifty per cent or less of the learners found the learning website user friendly and easy.</li> <li>• Fifty per cent or less of the learners felt that the learning website will assist them in improving the quality of their work.</li> <li>• Fifty per cent or less of the learners enjoyed working with the learning website.</li> </ul>

Table 1.2 listed the hypotheses that were formulated concerning the study.

## 1.5 Research approach

In this study descriptive quantitative statistics supported by qualitative techniques were used to gather data.

### 1.5.1 Literature review

A review and analysis of the available literature formed a foundation for the research. The first section of the research was qualitative in nature, and its purpose was to establish what factors and constraints e-learning and the Internet possess as a distance education medium. Further analysis



will make it possible to establish what factors need to be considered when designing and implementing a learning website as part of a course that uses a combination of media and technology for the education and training of postgraduate distance higher education learners (from previously disadvantaged communities) in nutrition and HIV and AIDS.

### 1.5.2 Data collecting methods

The empirical component of the research consisted of developing and testing a distance education course that comprised a combination of media and technologies for the teaching of higher education learners in nutrition and HIV and AIDS. The process included, for example, the testing of certain components from the course with distance education learners. The evaluation took the form of questionnaires, interviews and discussions with learners and peers and the observation of learners' verbalised thoughts and actions.

Table 1.3 lists the research instruments used for the study and the description of each. The research questions were investigated by using literature, questionnaires, interviews and discussion, usability testing and expert reviews as data-gathering instruments.

Table 1.3: Research instruments used for this study (adapted form Reeves, 1994)

Research instrument	Description
Literature	Review and analysis of relevant journal articles, books and electronic documentation
Questionnaires	Collecting data on learner background and computer/Internet literacy
Interviews and discussions	Collecting data on learners' experiences of using a combination of media and technology in a distance education course Suggestions made by learners and peers on improving the website
Usability testing	Using the learning website
Expert reviews	Collecting expert views on the use of e-learning in distance education

Table 1.3 listed the research instruments used for this study. A short description was given on how each of the instruments was used to collect data.

Table 1.4 on the next page gives the evaluation matrix of the research questions. It lists the research questions with indications as to what research instrument was used to evaluate each question.

Table 1.4: Research questions evaluation matrix (adapted form Reeves, 1994)

Question	Review and analysis of literature	Questionnaires	Interviews and discussions	Usability testing	Expert reviews
<b>Question 1:</b> What pressures are put on South African distance higher education institutions to provide postgraduate flexible learning to adult learners from previously disadvantaged communities?	✓		✓		✓
<b>Question 2:</b> How can e-learning and the Internet be implemented in such a way so as to add value to a distance education postgraduate course in nutrition and HIV and AIDS?	✓		✓		✓
<b>Question 3:</b> What constraints hinder the utilization of e-learning and the Internet in the distance education nutrition and HIV and AIDS course?	✓		✓		✓
<b>Question 4:</b> What interface design principles would best facilitate the communication of nutrition and HIV and AIDS knowledge to adult learners from previously disadvantaged communities?	✓	✓	✓	✓	✓
<b>Question 5:</b> To what extent does general web usability principles contribute to the communication of nutrition and HIV and AIDS knowledge to adult learners from previously disadvantaged communities?	✓	✓	✓	✓	✓
<b>Question 6:</b> What theoretical perspectives and adult learner perceptions play a role in the acceptance and utilisation of the Internet and e-learning and as training tools?	✓		✓		
<b>Question 7:</b> What media and technology are best suited for delivering distance education and what are the advantages and limitations of these modes for the delivery of distance education to adult learners from previous disadvantaged communities in the field of nutrition and HIV and AIDS?	✓	✓	✓		✓
<b>Question 8:</b> How should a distance education course that comprises a combination of media and technology be designed and developed so that it will be effective in training adult learners from previously disadvantaged communities?	✓	✓	✓	✓	✓

### **1.5.3 Subjects of the study**

The subjects of the study consisted of all the voluntary learners enrolled for the Social Behavioural Studies in HIV and AIDS Honours Programme. The course content comprises the role of nutrition in the management of the health and well-being of PLWHA.

### **1.5.4 Limitations of the study**

The following limitations of the study should be taken into consideration:

- The study focused only on a postgraduate distance education course in nutrition and HIV and AIDS.
- The affective implications of HIV and AIDS and other factors related to HIV and AIDS were not addressed because they are beyond the scope of this study.
- The development of the learning website was limited by technological constraints.
- The study was limited to learners enrolled for the honours degree programme in Social Behavioural Studies and HIV and AIDS.
- English was used as medium of instruction. But since English is the second language for most of the learners, this might have had a limiting effect on the usability of the website and the interpretation of course content.
- Most learners had limited access to computers and the Internet.

## **1.6 Significance of the research**

The results of the research should be significant in the following ways:

It identifies the factors and constraints that need to be considered when designing and implementing a learning website as part of a combination of media and technology for an interactive self-paced distance education course for use in developing countries.

It identifies the suitability of e-learning and the Internet as appropriate tools in a course using a combination of media for teaching learners in the field of nutrition and HIV and AIDS, or it provides evidence that e-learning and the Internet are not appropriate tools in a course using a combination of media for training learners in the field of nutrition and HIV and AIDS.

It provides strategies and general guidelines for the design, development and implementation of a learning website and e-learning as part of an interactive, self-paced distance education course comprising a combination of media, for use in developing countries.

It provides a basis for further research into the application of e-learning and other media and technologies as part of an interactive, self-paced distance education courses aimed at teaching learners from developing countries.

It contributes to the accumulated research into the relationship between design, information, the Internet, computer technology – and the training and teaching of learners by means of distance education in developing countries.

### **1.6.1 Structure of the thesis**

Table 1.5 on the next page gives an outline of the structure of the thesis. It lists the chapters and gives a synopsis of the content of each chapter.

Table 1.5: Structure of the thesis

<b>Chapters</b>	<b>Content</b>
<b>Chapter 1</b> Overview and orientation	Introduction Background Rationale for the study Research problem and questions Research approach Significance of the research
<b>Chapter 2</b> Review and analysis of the literature	A review and critical analysis of findings from reported research on each of the research questions
<b>Chapter 3</b> Project description: The learning website	Project description Design, development and implementation of the learning website Formative and summative evaluation of learning website and course
<b>Chapter 4</b> Research results	Questionnaire A: Learner profile Questionnaire B: Formative evaluation of learning website Questionnaire C: Summative evaluation of learning website Hypothesis
<b>Chapter 5</b> Conclusion and recommendations	Findings and results collected from the research Discussion Scientific reflection Recommendation Conclusion

## 1.7 Summary

This chapter has provided a framework for the study. It presented overviews on the application of e-learning and the Internet as part of a postgraduate distance education course to teach learners from developing countries and the implementation of these modalities in a course on nutrition and HIV and AIDS. Research questions that reflected the aims of this study were formulated. Chapter 2 reports on a review and analysis of the literature in an attempt to find answers to the research questions and to situate this research in its relevant theoretical and historical context.