

THE USE OF AUDIOGRAPHIC TECHNOLOGY IN A DISTRIBUTED LEARNING
ENVIRONMENT: A CASE STUDY

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BY

BRENDA LISTON-HANLEY

APPROVED BY

SAINT FRANCIS XAVIER UNIVERSITY

ANTIGONISH, NOVA SCOTIA

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ABSTRACT

In a knowledge-based economy it is important that adults have access to affordable learning opportunities so that they can keep abreast of the rapid changes taking place both in their work environments and their personal lives. These learning opportunities need to be designed to suit a variety of learning styles and be offered in a flexible manner in terms of time and place of delivery.

The purpose of this study was to determine if a particular learning opportunity, a course dealing with the fundamentals of financial planning that was delivered in a distributed learning environment using audiographic technology, met the needs of the students taking the course and the institution offering the course. To achieve this purpose a 45-hour pilot study using audiographic technology as the delivery method was initiated. This collaborative effort involved the following: three distinct academic areas in the institution, three different campus locations, and professionals from academic and support staff unions. On a weekly basis three cohorts of students interested in auditing and or receiving credit for an introductory personal financial planning course participated in the study. A college instructor facilitated the 3-hour weekly class using an on-line Powerpoint lecture and off-line small group discussions at the various locations. Data were collected through field notes, formative and summative evaluations, and informal conversations with the instructor, support staff, and students.

The thesis reports on the planning, implementation, and evaluation of the study. The program was successful in that it was delivered in a fiscally responsible manner, the students achieved their learning goals, and the institution remained committed to supporting a distributed learning environment.

ACKNOWLEDGEMENTS

This thesis has been a learning experience for me professionally as I have gained new knowledge and developed new skills. Most importantly though, I have grown to know my strengths and I have learned to accept my limitations as a result of this process.

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CHAPTER 1

INTRODUCTION

In today's knowledge-based economy, adults have come to realize that what they learned initially in order to secure employment no longer provides them with sufficient skills and knowledge to keep abreast of the rapid changes that are occurring in their current workplace environment. In addition to updating their skills and knowledge, adults of today are looking for learning opportunities that accommodate their diverse learning styles and are flexible in terms of time and place of delivery. In other words, the demands of today require that adults become lifelong learners.

Usually, adults develop their attitude regarding learning as early as preschool age. Typically, the lifelong learner throughout his/her lifetime seeks out learning opportunities that address a specific personal or professional development need. Their commitment to lifelong learning is significantly enhanced if their environment provides accessible, affordable, and available learning opportunities.

Lifelong learning activities have both an extrinsic value for society at large and an intrinsic value for the individual as a member of society. Extrinsically, these activities contribute to the development of a more highly skilled workforce, one outcome of which is a stronger and more inclusive society; intrinsically, these activities contribute to the personal development of the individual, one outcome of which is a more rewarding life.

In this thesis I describe how a distributed learning environment was used to promote lifelong learning. The study involved a group of adult learners in a distributed learning environment who took part in a pilot study that tested the delivery of a continuing education course, using audiographic technology.

Background Information

All aspects of life are being transformed by changing economic realities, technological advances, and the development of new knowledge in all disciplines. Society values knowledge. In our current environment, with the erosion of physical boundaries, new learning occurring in any part of the world can have an impact almost immediately on an individual's personal and professional life. The constant emergence of new knowledge and new trends in today's world can make current beliefs and knowledge obsolete very quickly.

Access to learning opportunities that are readily available and affordable is a major priority in a knowledge-based economy. This factor may be of less consequence for an individual in an urban area where numerous venues for learning are readily available, than for an individual living in a rural setting where access to learning opportunities either are limited or do not exist.

Traditionally, publicly funded educational institutions have had a mandate to provide access to learning opportunities to various constituent groups in a fiscally responsible manner. Today, these institutions are under scrutiny by the public to provide this level of service in all locales in an accountable manner, yet the operating model being used is more of a business model than an access model. When a business model is used

decisions about course offerings are based on demonstrated levels of participation rather than the learning needs of a particular population. As a consequence, smaller communities of adult students may be denied access to learning when the business model is used.

The mandate to provide access to courses has prompted many educational institutions to look at alternative methods for the delivery of curriculum. These methods do not always result in cost efficiencies for the institution, but many meet the needs of a cohort of students, who have diverse learning needs, and who face multiple barriers to learning, such as the time and place of the delivery of programs.

As an administrator of a satellite campus of a mid-sized community college in Ontario, I am committed to providing a broad array of learning opportunities to a small community that is at a distance from the main campus of the college. The mandate of this satellite campus is to provide the community where I work with access to all of the college's programs and services that are not housed locally. Currently, the satellite campus provides part-time day and evening learning opportunities directly related to the needs of the community. The campus is equipped with the infrastructure to ensure full connectivity with the main campus and the other satellite locations of the college.

To help me with this task, I formed a planning team that works with me as I try to achieve my long-term goal of offering a broader array of courses using alternative delivery methods. My short-term goal, which is reported in this thesis, was to pilot test a specific educational technology, namely, audiographic technology, that could be used in a distributed learning environment. I also had several objectives that included the development of the instructor's skills in the use of this technology so he could become

proficient in its use, and the identification of the kinds of supports that adult students require in order to be successful in a distributed learning environment. This thesis focuses on the planning, implementation, and the evaluation of the delivery of one particular course in a distributed learning environment that used audiographic technology.

Already there are a variety of educational technologies in use in the educational system, and there are many indications that the use of technology will only increase (Reed & Beaudin, 1993). According to Gibson (1992), educational technologies can be used effectively to increase the access of adults to learning opportunities. These technologies can also assist students in developing skills so they can continue to be lifelong learners throughout their lives (Bates, 1997). From a business perspective, as Massy and Zemsky (1997) note, educational technologies are seen as a way for institutions to increase their productivity.

All of these advantages are possible with the use of educational technology as long as the basic principles of adult learning are adhered to and followed. Therefore, program planners need to ensure that the focus of the learning activity does not become the technology and how it is used in the delivery. In other words, the technology should be transparent and the focus should be on learning and the facilitation of that learning. The teacher/facilitator of the learning activity should ensure that the students, who take part in this partially to totally virtual environment, feel safe, respected, and are able to form relationships with their peers and teacher. Adult students require the opportunity to relate what is being learned to their own experiences, to reflect on it, and to offer opinions and thoughts about the learning and its impact on them personally.

Audio learning (AL) and audiographic learning (AGL) are technologies that are categorized as educational technologies. These delivery methods can effectively meet the needs of adult students if used by a skilled practitioner and applied to appropriate curriculum.

AL and AGL make learning opportunities more accessible to students. The reliance of these technologies for transmissions on telephone lines, which are very stable and exist almost universally, is a definite advantage. The utilization of telephone lines for the transmission is relatively inexpensive when compared to the costs for transmission on Integrated Digital Systems Network (ISDN) lines, which are used for video conferencing. The equipment for AL and AGL, including a telephone, computer, and electronic tablet, is quite portable, therefore it is easy to set it up in most locations. Once in place, the technology should not require ongoing technological support to operate effectively. The software that establishes the computer and telephone interface is available from a number of distributors and once installed is not difficult to utilize. These technologies also allow for real-time discussion between the instructor and students at the various sites.

One of the most significant limitations of audio-based technologies is the lack of visual cues between the students and the teacher. This problem can be remedied to some extent by supplying the sites with copies of overheads, handouts, and even by videoing the instructor's session, but these remedies do not replace the use of the chalkboard or eye contact with the instructor. Some of these limitations are lessened by the use of the interactive whiteboard, often referred to as a SMART board. This type of transmission allows the students from all sites to communicate visually and orally while solving a problem or discussing a case study, visually using the SMART board, and orally using

voice transmission. Another limitation, in certain instances, can be the quality of the sound. The voice transmission can have static, and the ability to hear the intonation in the voices of others during discussion periods may vary. The software that is used for the computer conferencing is user friendly but may only interact with equipment made by the same manufacturer. The AL and AGL technologies are effective in freeing the learner from place constraints, but they do not free the learner from the time constraints of scheduled lectures.

AL and AGL technologies should be used when the achievement of the learning outcomes will be enhanced by activities that allow collaborative problem solving, idea sharing, and decision making. These are essential components of courses/programs that teach team building skills. These technologies are well adapted to the delivery of codified knowledge that can be enhanced with visuals and numerous opportunities for repetitive activities as a way to reinforce the students' learning. These technologies are also an appropriate choice when it is felt that the students would benefit from regular and ongoing contact with the instructor and peer group, especially when this kind of contact is needed as a motivational factor in completing a particular course or program.

Focus of the Inquiry

The main issue this study seeks to explore is how to facilitate lifelong learning opportunities in a distributed learning environment that is based on the principles of adult learning. The focus of the inquiry in this study was to determine if a particular learning opportunity, a course dealing with the fundamentals of financial planning that was delivered in a distributed learning environment, and used AGL during the implementation

phase, met the following criteria. Were the specific learning outcomes achieved? Were the students' needs assessed and considered? From the perspective of the students, the instructor, and the institution, does a distributed learning environment using AGL technology result in successful learning outcomes?

Purpose of the Study

This study had a two-fold purpose. First, I wanted to explore the use of a distributed learning environment that was supported by the use of an educational technology, specifically technology, in order to determine if this type of delivery method was appropriate for meeting the needs of lifelong learners. My intention was to identify and define the characteristics of a lifelong learner who could respond successfully to this method of delivery, as well as point out the challenges that faculty members and institutions might encounter in the delivery of curriculum, using this type of educational technology. Second, based on this information, I wanted to examine existing institutional supports to determine their adequacy. This examination would then help me to make recommendations that would assist the college as it continued to offer learning opportunities in a distributed learning environment.

In order to pursue this purpose, I conducted a pilot study of a course that used audiographic technology for its delivery, with a group of adult students. The course was advertised in the college's part-time studies calendar. It was described as a new type of learning opportunity that would be delivered simultaneously at three of the college's locations, using audiographic technology. I designed a three-tier evaluation process that included both formative and summative evaluation processes. These processes were my

main source of data for the study. Everyone who took part in the course at all three locations participated in the evaluation activities. These included: those who enrolled in the course, the instructor who delivered the course, and the staff who supported the delivery of the course at the central and satellite locations. The students' evaluation focused on an assessment of the learning opportunity in order to determine if it was meeting their needs as learners. The faculty evaluation focused on a personal assessment of his ability to provide a quality learning experience for the students. The support staff evaluations focused on an assessment of the demands placed on them with respect to supporting this activity within the existing institutional structures.

Scope and Limitations

This study explores the use of a distributed learning environment as a way for adults interested in accessing specific learning opportunities, to meet their learning needs related to professional and personal development. The particular aspect of the study is the evaluation of the effectiveness of this particular delivery method in providing a learning environment that promotes students' success. In addition, the study will determine if this type of delivery method will be financially sustainable for our institution.

The study has a number of limitations. First, the fact that there is no universally accepted definition of the term distributed learning environment causes confusion amongst some adult educators. They argue that a distributed learning environment is only suitable for a specific type of curriculum delivery and cannot be generally applied.

Second, the term lifelong learning lacks clarity. To some, the term refers specifically to learning that addresses the economic growth and development concerns of society. To

others, the term refers to an individual's personal learning goals that may or may not be directly related to employment.

Third, this pilot study used audiographic technology, only one of a variety of educational technologies that is available on the market. Consequently, the findings cannot be generalized. The conclusions reached from an analysis of the findings will only be applicable to this specific educational technology and to this particular group of adult students.

Fourth, all the students who took part in this study did not have the same objective for completing the course. Some of the students were interested in a credit for the course while others were auditing the course. This difference could skew the evaluation findings, especially when the students are asked if the distributed learning environment met their learning needs.

Fifth, the class size of the study group was restricted because of the use of AGL technology. In addition, the students at two of the three locations were not well informed about the fact that they were part of a study that was testing the use of a new educational technology. Again, this difference could skew the findings.

Finally, the support personnel at the satellite campus (Campus B) had a vested interest in making the study a success. These particular individuals, who had been associated with the campus for many years and who understood the many problems that the campus faced, were very anxious that the study succeed. Therefore, they committed a very high level of talent, time, and energy to the study. A similar commitment of time and energy, in order to mount another course using this delivery method, might be uncertain.

Assumptions

In carrying out this study I made a number of assumptions. First, I assumed that AGL technology was an adequate educational technology for the delivery of the Personal Financial Planning (PFP) course. Second, I assumed that the students who took part in this study would not be as reliant upon the instructor and would be more self-directed than those who took the same course in a traditional classroom setting. Third, I assumed that those who agreed to be part of a pilot study would be willing to identify supports that students like themselves required to enhance their learning experiences. Finally, I assumed that a favourable response to the study from each stakeholder group in the study would encourage my institution to continue to offer courses using audiographic technology or something similar.

Definition of Terms

Audiographics learning technology (AGL) is a type of technology and software that allows for the full diversity and versatility of computer enhancements to be utilized during the transmission of the data, including document creation and revision. There are also capabilities to extend the presentation and link it to the Internet during the transmission. This technology requires a telephone connection that allows two individuals, or groups of individuals, located in various locations to share in the same conversation. The graphics component of the transmission is made possible by the use of a computer and computer peripherals such as an electronic whiteboard or electronic

drawing tablet. This term is sometimes used interchangeably with data conferencing, document conferencing, and groupware.

Electronic whiteboard is a drawing tablet, often referred to as a SMART board. It is a 3 by 4 foot electronic display device that can be activated by touch or by an electronic marker. It can be linked by telephone to other such devices so that whatever is written at one site is seen at all other sites.

Campus locations refer to: Campus A--the main campus; Campus B--the satellite campus where I am the Campus Operations Leader; and Campus C--another satellite campus.

A distributed learning environment is a type of learning environment that uses learner-centered, problem-based, collaborative, and authentic approaches to learning. Technology is used to enhance communication and interaction for delivery, supports, and academic structures. This type of environment provides the opportunity to expand the learning beyond the physical setting of a classroom and to create a virtual learning community. For part or all of the module/course there is a separation of faculty, students, and resources (content people, activities, communities, and services).

Learning resource centre refers to a centralized location that includes a collection of academic and learning supports to assist students in furthering their lifelong learning.

Polycom is an audioconferencing telephone that allows groups of individuals at multiple sites to send and receive voice messages without the use of telephone hand sets and head sets. They are sometimes called a "starfish" phone.

Student supports are services that are provided by an institution in order to

promote student success. The supports that are provided for the on-site or distance students should be available from their first point of contact with the institution. These supports can include, but are not restricted to, the following: information about orientation, admissions, registration, advising and counselling, and instructional supports.

An open access learning lab is a designated area on the college campus that is equipped with computer technologies including a network connection and resources that students can access. This unstaffed but monitored learning environment can be accessed outside of scheduled class time.

Plan of Presentation

Following this introductory chapter, I present an overview of the relevant literature in chapter 2. Three areas are highlighted: the principles of adult learning as they pertain to lifelong learning, distributed learning environments, the use of educational technology, and the supports that students require to be successful in this kind of environment. In chapter 3, I present a description of the study. This includes a description of the planning, implementation, and evaluation processes. In chapter 4, my concluding chapter, I discuss the findings of the study in light of the literature reviewed, present conclusions, and make recommendations based on the conclusions.

CHAPTER 2

REVIEW OF THE LITERATURE

Leaders in educational institutions are currently challenged to improve access to lifelong learning opportunities for adults in their communities. Hatton (1997) explains the reasons for this challenge. He writes, "Individual and community welfare is protected and promoted when communities arrange for lifelong learning activities to be available to the widest range of constituencies through as many channels as possible in as many forms as are viable" (p.157). Many adult educators have developed methodologies that enable them to offer adults lifelong learning opportunities that are fiscally responsible and that are flexible in time, place, and delivery. At the same time, they attempt to ensure that the learning opportunities are relevant for adults and that adult learning principles are not compromised.

In this chapter, I review literature that deals with the major areas of my thesis. First, I provide an explanation of the term lifelong learning as a way to set the stage for this study. Second, I review the literature on the adult learner including general characteristics and the relevant adult learning principles applied in this study. Third, I define and describe a distributed learning environment, and point out how educational technologies are used in this kind of setting as a way to support the delivery of learning opportunities. In this section, I include a review of the factors that promote student success in a distributed learning environment.

Lifelong Learning

Kintzer (1997) reports that attempts to define lifelong learning can be traced to articles written in the early 1970s. In fact, the General Council of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in 1976, as a result of societal developments, adopted the following definition of lifelong learning and education:

'Lifelong education and learning' denotes an overall scheme aimed both at restructuring the existing education system and at developing the entire educational potential outside the education system; in such a scheme men and women are the agents of their own education. (Hatton, 1997, p. 2)

Kintzer points out that universities at that time expressed an interest in becoming involved in adult education because of the growing demand for continuing education, even though many universities did not understand very clearly the specific learning needs of adults. When they realized that adults were interested in accessing courses on a part-time basis, they became interested in exploring the learning dimensions of this need.

As a result, universities soon realized that in designing learning opportunities to address the unique needs of this emerging adult group, they would need to discern how the adults' learning needs were different from those of the traditional student in the university classroom. Universities soon learned that adults were looking for learning opportunities that recognized their experiences in a wide variety of life situations prior to entering a formal learning situation, and that these experiences would need to be factored into any formal learning setting. As students, adults were looking for learning experiences that would enhance and complement their existing skills and knowledge, and

that would focus on their specific needs rather than learning opportunities that had been defined by the institution and its teachers.

Kintzer (1997) explains that the design of lifelong learning experiences differs significantly from the design of learning experiences for the traditional student, because the expected outcome of the learning experience is different. Traditional learning experiences generally are based on a defined list of learning outcomes and predetermined levels of competency that all participants are expected to achieve in order to be successful. This approach is based on the idea that students enter an educational setting with a similar set of skills, and could expect to achieve a certain set of learning outcomes upon completion of the learning experience. This approach does not suit the needs of lifelong learners because they generally are interested in achieving outcomes that are specific to their needs. They usually place less emphasis on the achievement of standardized course requirements and the attainment of credits.

The establishment of continuing education units (CEUs) as a mandatory requirement to retain registration, professional competence, and standing in many professional organizations, has resulted in many individuals becoming involved in lifelong learning activities. The development of CEUs has added flexibility and breadth to the available options for lifelong learning. Kintzer (1997) explains that the growing recognition of these professional upgrading activities for academic credit has contributed significantly to the global development of lifelong learning opportunities. He believes that the concept of lifelong learning has had a positive impact on society. He also believes that the move to consider prior learning or experiential learning acquired in settings outside of the classroom, as a factor in meeting an institutions' admission requirements, has opened access to a larger group of people in society, consequently decreasing the opportunity gap

between educational “haves and have-nots” (p. 71). In order to address the needs of adult learners, adult educators have developed methodologies that provide credit for experiential learning achieved in settings outside of the classroom. Prior learning assessment (PLA) is a good example. Selman, Selman, Cooke, and Dampier (1998) describe PLA as:

The practice whereby an educational institution grants entry to its programs, or advance standing towards one of its credentials, to a learner who may not have the formal educational certification normally expected but who is judged to have the necessary knowledge or background, often achieved through their work, non-formal course or some other type of experience. (p. 28)

Chapman and Aspin (1997) explain that lifelong learning activities have both an extrinsic value for society at large, and an intrinsic value for an individual. They outline three integral elements that are part of any lifelong learning activity. These are: activities that contribute to the development of a more highly skilled workforce; activities that contribute to the personal development of the individual who can then have a more rewarding life; and activities that contribute to the development of a stronger and more inclusive society. They explain that these elements are interrelated and quite often more than one element is found in the particular lifelong learning activity.

As Chapman and Aspin (1997) point out, an individual begins to develop an attitude to learning as early as preschool. As an individual develops, so does commitment to lifelong learning. This commitment is influenced by specific factors in an individual’s environment including accessibility, affordability, and availability of learning experiences, as well as the impact of significant others in the learning environment, such as the teacher. Chapman and Aspin stress the fact that individuals will participate and benefit from learning activities if institutions create sufficiently flexible and articulated learning pathways that suit a wide variety of learners’ needs.

Lifelong learners will need advice and assistance so they can choose the learning opportunity that will address their personal learning needs. In this regard, Chapman and Aspin (1997) note that schools are only one vehicle for lifelong learning. They believe that close connections need to be developed between schools and workplace settings so that the learning acquired, either for paid or unpaid work, is recognized and credited.

Hatton (1997) broadens the discussion of lifelong learning. In his view, "Lifelong learning presupposes the development of a learning society; one where active, ongoing learning of a higher order will be broadly embraced" (p. 361). He claims that the movement of a society towards the development of a learning society involves making a clear distinction between education and learning. Education, on the one hand, is an observable activity that focuses on the process used to deliver information. This activity is most often associated with formal educational institutions. Learning, on the other hand, is an internal activity that focuses on the individual's attainment of knowledge, which may or may not be demonstrable, at the end of the process. Learning, according to Hatton, may include formalized institutional learning experiences as well as many other experiences and opportunities encountered in life.

Hatton (1997) supports the idea that lifelong learning is an essential activity for the development and ultimate survival of a society. He explains that the knowledge-based economy of today requires that individuals participate in ongoing learning activities, if a nation is to remain competitive in the global market. He predicts that two forces in today's world will have a significant impact on lifelong learning opportunities and the development of a learning society. These forces are the rapidly emerging technological advances that are in use in educational institutions, and the demand expressed by

individuals for lifelong learning activities. Hatton concludes by saying that lifelong learners and their need to know will “shake and shape educational institutions” (p. 371).

With regard to the belief that lifelong learning is essential for the continuing economic viability of society, Yorke (1999) explains that lifelong learning in today’s world is essential and required because of the accelerated pace of knowledge development. He notes that in earlier times the attainment of a first degree or credential was seen as a sufficient basis for a lifetime career. This assumption is no longer valid. He views lifelong learning as a multidimensional jigsaw into which various pieces of learning are fit, on a needs or interest basis, throughout an individual’s lifetime.

Hunt (1999) supports Yorke’s (1999) view that lifelong learning relates to more than maintaining the skill level of the workforce in order to ensure the economic stability of society. She argues that a recognition of the importance of lifelong learning as a means of personal fulfillment cannot be ignored, especially when trying to motivate someone to take part in a learning activity. Hunt warns that the movement to encourage lifelong learning and the development of a learning society is hindered when the message communicated about its value is linked only to employment and revenue production. She predicts that this narrow emphasis will result in fewer individuals participating in learning opportunities. This kind of situation, in her view, would negatively impact on an individual’s personal development and society’s advancement.

With regard to the idea that an individual can and does learn as the result of life experiences, Hunt (1999) believes that life experiences provide a significant foundation for learning that can be augmented through access to formal and informal lifelong learning opportunities. These opportunities, when supported by government and led by professionals who can offer encouragement and guidance for the individual at significant

“teachable moments” in their lives (Havighurst, 1972), benefit the individual and society as a whole. Hunt believes, if these opportunities are not available to the individual, the learning potential of the individual and society is unfulfilled and this fact will have a negative impact on society’s overall standard of living.

As Coffield (1999) points out, learning opportunities should be available and accessible to individuals for personal learning and growth. In this regard, his research supports the concept that lifelong learning opportunities play an important part in raising the productivity and standard of living of the entire society. He cautions, however, that individuals who support the argument that learning opportunities will transform a society into a learning society may be overlooking an important aspect of this developmental process. As he sees it, the availability of learning opportunities can have a positive impact on society, but they are not “a wonder drug or magic bullet which on its own will solve a wide range of educational, social and political ills” (p. 1) . The shift to a learning society will require the development of new methods of organizing work, positive industrial relations, and new managerial approaches. He points out that the move to a learning society will be supported through a society’s commitment to the development of comprehensive plans for global competitiveness. Over time, these plans could prompt a move to change specific governmental policies and business strategies, which in turn would support the development of a learning society.

By placing educational programming as part of the solution for the advancement of society, rather than making it the only solution for society’s ills, Coffield (1999) believes that the individual will experience less societal control and pressure to participate in learning opportunities. From his perspective, educational programming is part of the remedy for societal advancement because this kind of programming will also encourage a

greater level of participation and personal satisfaction for the individuals in this milieu. He explains by pointing out the following irony. Initially, lifelong learning opportunities were viewed as activities that individuals chose in pursuit of their own personal development. In today's society, however, lifelong learning opportunities are at risk of being viewed simply as compulsory activities that individuals must pursue in order to address their personal inadequacies as these relate to work. Coffield warns that this trend could lead to a distorted view that the only value of education is its ability to support business and increase personal earning power. This attitude, if it is accepted broadly, could have serious implications for the involvement of adults in lifelong learning opportunities.

The concept of lifelong learning is not a new idea. Of interest, though, is society's changing perception of the significance of learning activities. In the earlier years, the importance of these learning opportunities was linked to the attitude that these activities increased profitability in the workplace and for this reason were viewed as worthwhile and required endeavours. Later, lifelong learning activities were seen as important because they contributed to an individual's personal fulfillment. The researchers quoted in this section believe that acceptance of this additional value of lifelong learning is the reason that individuals may be more likely to participate in learning opportunities on an ongoing basis. All lifelong learning opportunities must be designed to suit adult learners' needs. These will be discussed in the next section.

The Adult Learner

To ensure that the learning opportunities being offered to adults meet the needs of this target group rather than those of the institution and the teachers offering the programs, adult educators must have a knowledge and understanding of adult learners and adult learning principles. This knowledge and its application to the learning situation ensures that the teaching-learning process will include activities that address the specific needs of the adult learner, and at the same time provide accurate and relevant learning opportunities. This kind of approach promotes the learner's success.

Who Is The Adult Learner?

Statistics Canada (1999) research provides current information about the number of adults involved in learning opportunities and their level of academic achievement. This research calls attention to the fact that "more than 6 million people or 28% of all adults in Canada participated in adult education and training activities" (p. 1) in the survey year. An examination of the academic level of these participants reveals a definite correlation between participation in learning activities and previous attainment of formal schooling credentials. In other words, those with higher academic attainment are more likely to participate in learning opportunities when compared to individuals who have lower educational attainment. The participation rates ranged from a low of 11% for those with less than a completed high school diploma to 48% among those with a university degree. In the latter group, 21% were involved in learning activities that were job related. Their data support the finding that university graduates have higher employment rates. This data also supports the fact that university graduates require ongoing learning

opportunities to keep abreast of the expanding knowledge and changing skill sets required in their work environment.

Based on data provided in the National Research Network on New Approaches to Lifelong Learning (NALL) survey, Livingstone (1999) characterizes adult learners and their interest in learning as follows: of the 40% of all Canadians who have taken a course, workshop, or some training program during the past year, more than half of this group intends to be involved in some organized course work during the next few years. An even greater proportion of this is interested in further studies, especially if they could be assured that their prior learning experience would be recognized as valid and accredited by an institution. Adults expect to have access to prior learning assessment (PLA) because this form of accreditation will reduce the time and number of prescribed courses required in another program. PLA ensures adults that they will not have to engage in learning opportunities that are redundant or not suited to their particular learning needs. An explanation of PLA is provided in an earlier section of this chapter.

It is not a new idea that academic level is a reliable predictor of an individual's frequency of involvement in adult education and training activities. Thomas' (1988) research, which predates the Statistics Canada (1999) publication, had similar findings. However, his findings relating to the reasons why an adult learner engages in lifelong learning activities differ from the Statistics Canada findings inasmuch as he describes the adult learner as someone who may or may not have a clear reason for engaging in a learning activity. He found that adult learners sometimes showed some ambivalence regarding their specific interest in the attainment of new knowledge. Frequently they did not state a specific work-related reason for their involvement. Statistics Canada findings conclude that adult learners have clear reasons for engaging in learning activities.

Many adults who took part in Thomas' study stated that they were interested in learning opportunities in order to gain an understanding of their personal life experiences and to explore new ideas openly with other learners. Thomas's (1988) data portrays the adult learner as an individual who has experienced and has been influenced by numerous life events. He explains that these experiences need to be processed and understood so that an individual can assimilate additional new information during future learning opportunities.

Characteristics of the Adult Learner

With regard to the characteristics of adult learners, MacKeracher (1996) organizes these into five areas: physiological factors, past experiences, time perspectives, the self, and self-direction. She is careful to explain that the characteristics are interrelated even though she discusses them separately. She believes that each characteristic needs to be considered and assessed when planning adult learning experiences. She identifies two physiological factors that significantly impact on how an adult learner functions in a teaching-learning situation. These are: the individual's level of sensory acuity, and the speed of physical response to visual or verbal stimuli. Accommodations in the teaching situation should provide for variations in acuity of the senses and for increased response time. These accommodations will determine the success or failure of the learning experience much more accurately than any modifications to the curriculum.

The variety and type of past experiences an adult has encountered in life are significant factors to consider when assessing an adult learner in a particular learning setting. In this regard, MacKeracher (1996) describes the adult as a composite of previous life experiences. In other words, the adult's reality is constantly being modified in response to the experiences occurring as a result of ongoing life events. New

experiences create additional “figures” on the “ground” of former experiences (p. 34). This evolving reality needs to be understood by the teacher and factored into the planning of adult learning opportunities. MacKeracher points out that the amount of time allotted to the adult learner to absorb what they have learned during the learning experience can hinder or help the learning process. Adult learners need to be provided with sufficient time and psychological support in order to gain an understanding of their previous experiences. Without this accommodation, attempts at new learning may conflict with previously held beliefs, and the adult will have difficulty synthesizing this new information.

Adults generally have an established sense of self. In spite of this, as MacKeracher (1996) points out, the individuals may or may not be able to verbalize a clear statement of their needs as learners; therefore, it is important that teachers consider the characteristics of adult learners when they plan learning experiences. New learning may challenge an individual to examine previously held beliefs that ultimately could result in a change in their established sense of self. When this happens, the adult will need to engage in a process of weighing the positive and negative risks inherent in changing this image of self as a result of the new learning. MacKeracher reiterates the fact that adults may require support and reassurance if and when they attempt to redefine their self- image.

In the discussion of self-direction as a characteristic of adult learners, MacKeracher (1996) disputes the idea that the adult learner can be clearly characterized as self-directed or not. She believes the discussion of whether all adults are self-directed is difficult because the definition of the term is not clearly understood. She points out that a knowledge of the context in which this term is used is important, because an adult learner, in different settings, when faced with different tasks, can exhibit varying degrees

of self-direction. She believes that in order to have a thorough understanding of the adult learner in terms of addressing learning needs, the educator, in addition to assessing the learner's ability to be self-directed, should also consider particular situational factors.

Adult students' ability to be self-directed in the learning setting can be impacted by: fluctuations in personal energy levels, pressures from demands and stress in other aspects of their lives, personal motivation for entering into the learning activity, and their ability to handle anxiety.

Merriam and Caffarella (1991), unlike MacKeracher (1996) do not have any reservations about characterizing adult learners as self-directed. Based on reported findings, they estimate that 90% of the adult population is involved in at least one self-directed learning activity in any given year. They point out that adult educators need to understand that this self-directed style of learning does not occur in a predictable linear fashion. An individual's learning is constantly impacted by numerous variables that are occurring in their lives, such as available time, resources, and motivation. Based on this perspective of self-directed learning and the prevalence of this style of adult learning, Merriam and Cafferella challenge adult educators to ask themselves if current formal instructional programs for adults and the role of the educator in these activities should be modified to encourage a greater degree of self-directed learning.

From a different perspective, Candy (1991) is careful to explain that when the term self-directed is used in the context of educational activities it has two dimensions that are intuitively linked and are related to the process and product of the learning activity, rather than a characteristic of the individual. He refers to learning activities in which the outcome of the experience is clear and the learners are encouraged to determine the way they will achieve the desired outcomes and to identify the resources they will call upon to

assist themselves. Adult educators, who have an awareness of these dimensions, are careful to ensure that the aim of a particular learning activity is clear. This understanding provides for modifications to the learning activity so that it will either promote self-directedness in supporting self-managing learners in the process of learning, or self-directedness because this awareness encourages adults to be more involved and autonomous in choosing what is to be learned. Regardless of the dimension of self-directedness in a learning activity, Candy is of the opinion that all learning activities are social activities, because the individual is part of some group or society that provides the social justification and motivation for the learning.

As part of his characterization of the adult learner, Eastmond (1998) lists certain features including the fact that adult learners value interactivity and look for it in learning experiences. As learners they want learning opportunities that provide for self-directedness. In other words, they value experiential learning and want the freedom to choose learning opportunities that fit their professional needs and their developmental stage in life. According to Eastmond, adults prefer learning activities that are based on a constructivist model and are offered in an environment that promotes democracy. Their preference requires that the learning experiences occur in an environment that meets the learner's need for a sense of community, even if there is a separation of teachers and students, as often occurs in distance learning opportunities. Adults value a level of interactivity in their learning and look for this kind of dialogue on every level: with the institution, their teachers, and other learners.

Adult Learning Principles

Knowles' (1978, 1980, 1989), and Knowles and Associates (1984), formulated six main assumptions about adult learners, which have withstood the test of time. Four of the six assumptions are presented in this section because they are relevant for this particular study. One of these assumptions describes the adult as an individual who at times can be either a dependent or self-directed learner. In other words, when adult learners have a clear sense of the personal gain that will be realized during the learning process, they expect to be involved in the planning and the evaluation of the learning process. They want to be self-directed if the outcome is evident, whereas adult learners who do not have a clear understanding of the expected outcome of the learning activity may appear to be more dependent, requiring more assistance and direction in defining their specific learning goal.

Another of Knowles' (1980) assumptions emphasizes the importance of the volume and nature of the adult's life experiences in the learning process. These experiences, either positive or negative, can have an impact on the learner and either facilitate or inhibit further learning. For this reason, any adult learning opportunities should be structured to include experiential techniques with a focus on practical applications. In this way, the adult learner's former life experiences can be explored and understood in light of the learning experience.

The two other assumptions (Knowles & Associates, 1984) deal with readiness to learn and orientation to learning. Regarding readiness: this readiness can occur naturally as the result of an individual's movement into a particular developmental stage, or it can be

triggered by exposure to certain activities or events. These occurrences create in adults an interest or readiness to learn specific information at a time when it will be most relevant to them. Regarding orientation to learning: when adults are exposed to certain events they can clearly see what knowledge they have and where the gaps exist in what they do know. They are often interested in gaining information that will equip them to handle better a current reality in their life situations.

Cross (1981), in her work, describes the adult learner using two frameworks: the Chain of Response (COR) and the Characteristics of the Adult Learner (CAL) models. Both models are based on the belief that an individual's self-concept and attitude to education are two significant psychological characteristics that impact on an individual's decision to become involved in learning activities.

The Chain of Response (COR) model defines the factors that motivate adults to participate in learning. This model describes a number of elements that are interrelated. These include self-evaluation, attitudes about education, importance of making and meeting goals, life transitions, opportunities and barriers, information about the environment and participation in it. Cross (1981) points out in her model how the interaction of these elements does not always occur in a linear and predictable fashion. Her research calls attention to the fact that the primary motivation for an adult's involvement in a learning activity is internal. Her model reinforces the concept that the previous experiences of an individual and his or her evaluation of these experiences will have an impact on an adult's willingness to become involved in future learning opportunities.

The Characteristics of Adult Learners (CAL) model depicts the combination of personal and situational characteristics with regard to their impact on adult learning.

Cross (1981) developed this model in an attempt to motivate the adult educator to utilize distinctly different strategies when teaching the adult, rather than relying on the strategies used in teaching a child. The model presents personal characteristics that describe the adult learner, and the situational factors describe the conditions under which the learning takes place. The situational variables are usually expressed as dichotomies: part-time versus full-time learning, and voluntary versus compulsory learning.

With regard to personal characteristics, Cross (1981), as part of her CAL model, presents what she refers to as a personal characteristic schemata that has three dimensions: physical characteristics/aging, sociocultural characteristics/life phases, and psychological characteristics/developmental stages. As she points out, educators need to think differently about each of the personal characteristics in the CAL model. As she explains:

The physiological continuum calls for an educational stance that is largely adaptive and adjustive...The educator's role on the sociocultural continuum of CAL is also adaptive and adjustive, this time with the emphasis on adjustment... the role of the educator on this continuum [developmental stage] should be described as *challenges*. (pp. 239-241)

She reminds adult educators to consider all three continua in the planning of learning experiences. Using the model as a planning framework will ensure that the learning opportunities will suit a diverse population of adults because the full spectrum of personal characteristics of the adult will have been assessed and will provide the basis for the selection of effective teaching practices.

In reference to adult learning principles, Cahoon (1998) emphasizes the importance of an adult's life experiences and social situations as motivators for adults to become involved in learning situations. As he sees it, adults like to apply their learning to

practical situations. They value being able to access and use information quickly. He points out that adults who commit to learning opportunities are making increased demands for flexibility with regard to time, place, and delivery of their learning opportunities. Adults expect educational institutions to make these accommodations so they can meet their learning needs while balancing their personal, family, and work responsibilities.

Slotnick, Pelton, Fuller, and Tabor (1993) support the finding that adults' previous learning throughout their lives places them in a better position to continue learning because, as they explain, adults enter learning environments with a specific need to know. Their motivation is more life (process) centered than product (content) centered. As they see it, the motivators for adults in learning situations are internal and personally defined. The findings of Slotnick et al. about adult learners support those of Knowles and Associates (1984) who state that a sense of self-esteem, a desire for a better quality of life, greater self-confidence, and self-actualization motivates adults, rather than the factors that motivate children, such as the reward of grade attainment. Slotnick et al. note that adults value internal rewards for their efforts and often decide for themselves if they have met their goals.

Slotnick et al. (1993) explain that adults generally recognize their need to learn and often decide to fulfill these needs based on a time frame determined by themselves. Adult learners want a clear explanation of the learning outcomes to be achieved as a result of the learning experience. In other words, they want to ensure that the learning activity will address their particular needs accurately. These authors refute those who imply that because of age adults are somewhat disadvantaged with respect to learning because of age. They point out that some of the behaviours exhibited by older adults

when re-entering a learning situation are often inaccurately interpreted as an inability to learn because of age. Many of these so-called learning difficulties are resolved if the information is presented at a slower pace in a non-competitive environment.

Adult learners frequently become interested in entering a learning situation for a variety of reasons throughout their lives. Their individual characteristics, their previous life experiences, and their stage of physiological and psychological development are important considerations that the adult educator should keep in mind when planning a learning experience. Adult educators who can plan, design, and deliver learning experiences for adults based on the above considerations will promote student success and encourage participation in lifelong learning.

In addition, Slotnick et al. (1993) point out that adults in the current social context often are expected to manage multiple demands on their time and fiscal resources. Educators are now examining the use of educational technologies to address the affordability and accessibility issues that create barriers for adults who wish to participate in learning activities.

A Distributed Learning Environment

The concept of a distributed learning environment has evolved in response to a number of factors. One main factor is that adult learners are looking for accessible, affordable, and in many instances, *just in time* learning experiences to address their personal and vocational learning needs. Another factor is adult learners are demanding quality learning experiences that suit their learning styles, foster student success, and help them to meet their individualized goals according to their own schedule. Still another

factor is the many technological advancements in the area of communication that have been applied to the teaching and learning process.

Faced with this situation, adult educators are challenged to integrate these factors in the program planning and at the same time to ensure that adult learning principles are not compromised. Addressing this challenge in a distributed learning environment involves decisions about the appropriate use of technology in the teaching and learning process, the design and plan of technology-based learning opportunities, and learner supports required to promote student success in a distributed learning environment.

A Description of a Distributed Learning Environment

A distributed learning environment encompasses traditional distance learning activities and broadens these opportunities to include all teaching and learning activities that involve a separation of faculty, learners, and resources (i.e., content, people, activities, communities, services) for part or all of the learning experience. A distributed learning environment uses learner-centered, problem based, collaborative, and authentic approaches to learning. Technology is one of a variety of options that can be used in this environment to enhance communication and interaction for the learners, during the delivery of the curriculum and in the provision of learner supports. According to Angel, Knibb, and Sjolín (1999), a distributed learning environment provides the infrastructure to create a totally virtual learning community of teachers and learners.

Appropriate Use of Technology in Education

Johnson (1995) traces the history of technologies in the education sector beginning in the late 1960s and early 1970s. During the early days when technologies were being introduced, the courses offered by educational institutions usually related to understanding the mechanics of the emerging technologies. The computer courses

focused on programming languages so the technologies could be used to perform required tasks. In the late 1980s and early 1990s, educational institutions in response to their mandates started to explore the use of the same technologies for the delivery of learning opportunities. Johnson sees this progression of technologies in education as a positive move for the adult learner. The use of technologies in teaching and learning allows the teachers and adult learners to have improved access to resources. In this way, learning is enhanced. Today, adult learners have more opportunities for the safe and repetitive practice of skills using technology because the variables can be manipulated frequently. Johnson, however, warns against the indiscriminate use of technologies in education. He points out that technology is not a panacea enhancing all learning opportunities. He cautions that the use of technology can be destructive, especially if there is a mismatch among the learning activity, learning outcomes, and the capabilities of specific technology. He gives as an example the transference of the text of a textbook to printed text on a computer screen. This change in the source of the text may increase access to the content of the book, but it does not necessarily enhance the learning activity of reading the text for the learner.

As Bates (1997) sees it, the use of technology in the teaching and learning environment is a requirement if an educational institution is to remain viable. He supports the use of the Internet because of its flexibility with regard to a variety of course designs and delivery models. He claims that technology needs to be integrated into all aspects of the organization's structure if it is to be accepted. If this is not done, he predicts that the move to technology-based teaching and learning methods will not be valued by faculty and will be viewed as something added on by the institution. Blackett (1998), too, endorses the use of technology in education. He predicts a significant shift in

control from the teacher to the student in the teaching-learning process with the use of technology. As he explains, the learners will assume more control over the pace and timing of their learning, and the use of technology will allow learning to be freed from place and time constraints. He supports the use of technologies that have a broad range of applications and that are selected on the basis of enhancing the learning process.

With regard to the use of technologies in the teaching-learning process, MacDonald (1998) supports technologies such as audiographics and audio learning because they are affordable and quite portable. These technologies have the potential to enhance learning for individuals who are uncomfortable in large group settings, because they allow smaller groups at a distance from the delivery site to participate actively in the larger learning group. He points out that in order for technology to enhance the teaching and learning environment it should be transparent; that is, it should serve as a medium for the learning activity and not be the focal point. This objective can only be achieved in situations where the users have developed a skill level and comfort with the equipment and its applications.

Many authors (e.g., Blackett, 1998; Milliron & Miles, 1998; Reed & Beaudoin, 1993) endorse the use of technology in education. Milliron and Miles claim that teaching excellence and the human and interactive aspects of the learning process need not be jeopardized by the use of technology. They caution that technology should not be a distraction but rather an enhancement in the teaching and learning process. Milliron and Miles, as well as Blackett, agree that if technology is integrated into the learning experience appropriately, learners will have the opportunity to take more control of their learning. Milliron and Miles predict that as society moves to the point where an individual's use of technology becomes a basic literacy skill similar to reading and

writing, these predictions about the value of technology in education will become realities. Although Reed and Beaudin support the use of technology in education, their only hesitation about its use stems from the fact that a significant investment of time, training, and resources is necessary in the preliminary stages for all who are involved in the learning experiences. This investment helps the users to develop confidence in the technology and an understanding of its capabilities. They predict that if this investment does not occur, an attitude of resistance or non-compliance will develop. This reaction could detract from the intended benefits of introducing technology in education.

Another concern with the use of technology in education is the risk of creating a class structure among learners, if technology is not available to all learners. Tapscott (1997) has a similar concern. He fears that educational institutions in attempting to open access to learning could unintentionally create a situation that could potentially exclude a part of society that does not have basic technology skills, thus creating a barrier to lifelong learning opportunities for some individuals.

Even though the integration of technology into education is very forward thinking, writers like Roy (1998) emphasize the fact that educators need to have an eye to the past during the planning stages of a program. She also reminds educators that important lessons can be learned from previous attempts to introduce new methodologies in the teaching and learning process, especially if all of the possible implications for the learner and learning process have not been considered before the implementation of a program. She uses the example of the move in the 1960s and 1970s to introduce large lecture style classes. She points out that this decision still has a negative impact on learning activities in educational settings today. She cautions that the lure of cost savings, which may eventually be realized with the use of technology, should not be the primary focus of the

decision regarding its introduction. Decisions that impact the learning process can have significant and long-term implications for teachers and learners. Roy predicts that today's educators have the opportunity to safeguard the quality of the learning process while realizing cost savings, provided a broad perspective is maintained and the process of introducing technology is done in a strategic and planned manner. She also cautions educators that technology will not correct all of the ills that exist in some teaching and learning situations. In fact, she points out that the use of technology may result in an even larger negative impact on learners, because the less desirable methods of teaching that exist in an institution can be delivered to a larger audience, at a faster pace. In her view, technology is a tool that can enhance a well-planned learning experience. If it is used effectively, technology will liberate both the student and teacher from the boundaries of the classroom. This enhanced learning environment will allow the teacher to provide learners with opportunities for greater self-direction and more opportunities for reflection on their learning.

In addition to the authors mentioned previously in this chapter, Bates (1997) and MacDonald (1998) also support the use of technologies in the teaching and learning process. The wide variety of technology that exist make it important for the teacher and learner to develop some basic literacy with regard to technology, so that the technology enhances and does not detract from the learning process. Roy (1998) notes that this situation will only happen if institutions commit time, energy, and resources to the implementation of technology, and if institutions put a strategic plan in action. He also points out that educators need support with their role transformation from that of teacher, as a deliverer of facts, to that of facilitator using technologies to promote student success.

Designing Technology-Based Learning

The learning experiences that utilize technology require specific design features. In addition, the characteristics of the learner need to be considered in the design of these experiences. Conti and Kolody (1998) remind adult educators that in designing learning opportunities for adults they should utilize a framework that considers the major elements of the teaching-learning transaction: the teacher, the learner, the content, and the situation. Based on a knowledge and understanding of the interaction of each of these elements as they relate to the specific teaching-learning activity, the planner will be prepared to select delivery methods that are appropriate for the learning activity.

In designing technology-based learning, teachers should begin by examining their personal educational philosophies in order to assess their beliefs about learning and the learner. According to Conti and Kolody (1988), the fact that the teacher's instructional style is based on these beliefs will determine the level of control the teacher requires in the teaching-learning process, and will impact on the choice of methodologies used. If teachers need to control the sequencing of material, they will have difficulty with the use of the Internet in the teaching-learning process because it is an open-ended process. The incorporation of the World Wide Web (WWW) into the learning experience can direct learners, but cannot control them in their exploration of a topic.

With regard to types of learners, Conti and Kolody (1998) have identified five types of learners: navigators, monitors, critical thinkers, engagers, networkers. These types have a fairly equal representation in any group of learners. Knowledge of the characteristics of these broad categories of learners will guide teachers in their choice of a technology-based method that will address a broad range of learning styles and will facilitate the teaching-learning process successfully. Throughout the learning experience, the teacher

will continually be required to provide modifications to the technology, in order to address individual learner's needs as they become apparent.

Conti and Kolody (1998) encourage adult educators to assess the course or program content before choosing a technology-based method, because this is an important initial step in determining how to proceed with designing particular learning activities. This assessment is a two-step process: assessing the curriculum and determining the learning outcomes. The assessment will determine if the curriculum requires a specific sequencing of topics and the examination of the outcomes will determine the level of the cognitive and skill-based learning that is expected in the activity. If the curriculum requires a specific sequencing of the topics in order for the material to be understood by the learner, then minimal use of the WWW will be encouraged in the initial stages of the activity, because the Internet is open-ended. If the learning outcomes focus on the memorization of certain facts rather than the application of the information to a problem, then technologies that promote repetitive activities will be more suited to the learning activity.

Conti and Kolody (1998) also recommend assessing situational factors. This recommendation refers to the examination of the larger context of the learning environment and involves conditions "that prevail during the learning that are not the personal or psychological attributes of the learner or teacher" (p. 139). Included in this assessment is a review of the mission and vision of the organization as it relates to the goal of providing learning opportunities. It also includes assessing the availability and accessibility of facilities and equipment, and the commitment of the organization regarding the provision of resources to support services for the teacher and learner throughout the learning experience.

On this same topic, Knibb (1999) cautions that too often course design is based on what the teachers will do in the teaching-learning transaction and not on the intended transformation or change in the learner that will take place as a result of the learning experience. If done properly, the design of the learning opportunity should help the learner to learn more effectively and efficiently. This objective is achieved if meaningful outcomes are clearly stated and activities that lead to the attainment of these outcomes are developed. A central feature of learning design includes creating an experience that elicits performance and transformation on the part of the learner, and provides opportunities for feedback from the instructor or facilitator on an ongoing basis.

With regard to the use of the Internet as a methodology in designing technology-based learning, Gilbert (1998) endorses its use because the magnitude and breadth of sources of information that are available to the learner are remarkable. The Internet offers a potential advantage that promotes self-directed learning opportunities and allows learners to control their own learning. At the same time, Gilbert warns that this advantage can create disadvantages for the learners as well. They can become overloaded with too much information and have difficulty in identifying reliable sources of information. She predicts that learning situations using the Internet will need to provide opportunities to assist learners in identifying what needs to be learned in order to promote their growth and to help them in meeting their learning goals.

The potential benefits of technology-based learning opportunities for adult learners are many. For example, Eastmond (1998) believes that the Internet, as a methodology for learning, is well suited to adult learners because many of them have the capability to be self-directed. He points out that adult learners are well suited to what the Internet can provide. They often prefer learning that is linked to a broad spectrum of life experiences

as well as opportunities for interactivity, reflection, and collaboration in their learning experiences. Eastmond claims that skilled educational designers have the opportunity to individualize assignments and activities to a greater degree when using the Internet. This is achievable if the course guide suggests strategies for learning within an on-line environment and provides resources to assist the learner in the virtual world. In his view, “the courses should be designed to foster a *deep* learning approach, in which students find enjoyment and meaning in a personalized academic task that fits into a holistic view of the subject while eschewing *surface* learning” (p. 38). He claims this design approach will assist learners and prevent them from being overloaded with information that is analyzed superficially for the sole purpose of completing prescribed class assignments.

Donovan and Macklin (1999) summarize many of the previous statements related to technology-based learning, and claim it will result in enhanced student learning and teacher productivity. They remind educators that all decisions regarding the use of technology in education must be based on pedagogical goals that have been researched in an adult learning environment. They recommend that institutions interested in the inclusion of technology in the teaching and learning process should be aware of the human and financial resources required to support the teacher in the delivery of the curriculum and to promote a successful learning experience for the students.

Learner Supports to Promote Student Success

Brindley (1995) points out that many adult educators have allotted time, energy, and resources to the development of learner supports in many different educational venues as a way to improve access to learning, yet they have not paid the same attention to the

provision of learner supports in technology-based learning venues. She firmly believes that the venues clearly identify an institution as a learning-centered organization and one which values student success as an institutional goal. She supports the concept of learning as a lifelong process. Her belief is that most individuals, if they are provided with the opportunity and with adequate and appropriate supports in a timely way, will be successful as learners. She believes that one of the goals of formal learning systems is to assist individuals in developing into both independent and collaborative learners. As she sees it, the individual who experiences this style of learning will develop skills to take responsibility for what they learn and how they learn it. She views the teaching-learning cycle as an opportunity to provide a supportive interactive process that can promote personal change and self-action for the learners.

With regard to learning opportunities that claim to be truly accessible, Brindley (1995) warns that unless learner supports are a part of the planning and delivery of the learning opportunity, the opportunity is not really accessible to all learners. As she points out, learner services are not a static list of resources. She believes the development of these support services should take into account the unique and changing needs of the students being served, as well as the institutional context in which the learning opportunity is being developed. Each organizational restructuring and reorganization activity that occurs can significantly impact the availability of learner supports for all students, but in particular the distant learner who is not on-site. The resourcing of these services cannot be ignored, or a situation will be created in which the institutional plan and vision may speak of accessible learning opportunities for all students, yet there will be disharmony between the written intent of the institution and the service delivery.

Knibb (1999) provides a suggested list of learner supports including services in the following areas: orientation, admission, registration, advising and counseling, as well as instructional supports. The service goals underpinning the provision of these supports to adult learners include: a) the engagement of the students early in the experience to facilitate a feeling of connection to the institution; b) the development of independent learners that includes their empowerment to choose the services they need to meet their learning goals; c) the personalization of the learning system to address various learning styles; d) the democratization of services for on-site and at a distance learners; e) and the empowerment of faculty involved in the learning opportunity. Eastmond (1998) emphasizes the importance of support mechanisms for individuals studying at a distance from an institution. He supports the principles and the types of learner services that Knibb (1999) and Brindley (1995) have outlined. In addition, Eastmond emphasized the human aspects of the interactions that faculty have with distance students, as being a critical support service mechanism. He believes that interactions should be “caring and stimulating...using a variety of techniques to enliven the course ... providing individual attention in private messages while providing summarizing comments in general discussions” (p. 39).

As Sherron and Boettcher (1997) point out, an important aspect of an institution’s shift to a new paradigm of delivery of learning opportunities in a distributed learning environment is ensuring that all stakeholders have a clear understanding of the vision of the organization regarding this learning strategy. Addressing the new and emerging opportunities that are being presented by the advancements in technology and the changing needs of learners is possible once there is consensus on the part of all stakeholders about this institutional vision. This understanding will lay the groundwork

for the development of the necessary alliances between the service and academic sectors of an institution internally, and between the learners and the institution externally. If attention is not given to an understanding of the strategic direction as stated in the institution's vision statement and its achievement, the distributed learning activities will be fragmented, resource allocation to learner supports will be insufficient, and students will become disenfranchised from the institution. Sherron and Boettcher emphasize the fact that this exercise of refocusing the activities of the institution in keeping with the vision should be revisited frequently, because of the rapidly changing needs of learners, the learning environment, and society.

Summary of the Literature Review

Educational institutions that are attempting to meet the challenge of providing lifelong learning opportunities which will address the learning needs of a diverse society are required to balance the demand for accessibility of learning opportunities for a broad spectrum of adults with the need to maintain the integrity of the learning experiences. Educators need an understanding of the characteristics and needs of the adult learner so that these unique needs, based on physiological, sociocultural, and developmental realities, are addressed during the learning opportunities. In addition, the teaching strategies utilized require modifications, especially if they are geared to younger students.

Adult learners, throughout their lives, are looking for learning opportunities that enhance their personal growth, and develop and expand their vocational skills. These lifelong learning opportunities, which benefit the individual and society, are occurring in traditional and nontraditional settings and are prompting changes in educational institutions. This fact requires adult educators to re-examine and modify admission

requirements, course and program formats, and delivery methods in order to meet the needs of the adult learner.

Adult educators can take advantage of current technological advances in addressing the need for flexible and accessible learning opportunities for society. Institutions that strategically plan the incorporation of educational technologies into the teaching and learning process by making a commitment of time and resources for teachers and students to become knowledgeable and comfortable with the technologies will be successful. Technology provides enhancements to the learning opportunity if the appropriate design techniques and learner supports are incorporated into the learning experience.

In the next chapter, I describe how a distributed learning environment was used to provide an accessible learning experience that was flexible with regard to its location. The context is a group of adult learners, geographically separated from the main campus of a college, who took part in a personal financial planning course.

CHAPTER 3

DESCRIPTION OF THE STUDY

This study involves the description of a pilot study in which the curriculum for a college level course, Personal Financial Planning (PFP), was delivered using audiographic technology. This study was undertaken to gather information regarding the effectiveness of a specific educational technology as a delivery mode that was used in a distributed learning environment. I assumed that the data collected from the various stakeholder groups involved in the study would have an impact on the future planning and delivery of accessible lifelong learning opportunities at the community college where I work.

Context of the Study

I am employed as the Campus Operations Leader at a satellite campus of the college. In 1995, the whole college including the satellites went through a significant restructuring of its administrative and instructional areas. The reason for the restructuring was threefold: the college had experienced a significant reduction in funding because of a new government policy regarding publicly funded educational institutions; the college had decided to begin using appropriate educational technologies in order to provide open access to learning opportunities; and the consumer had begun demanding educational opportunities that offered flexibility with regard to time and location.

The college's restructuring was intended to promote changes in all of the service and academic areas of the college's operations related to the delivery of programs. The impact of these changes in turn would result in the role redefinition of many employee classifications at the college, especially those involved in the delivery of its programs.

The Community Environment

Concurrent with the restructuring at the college, prospective students in the communities in which the college's satellite campuses were located had identified barriers to learning opportunities especially for those who wished to access work-related training. To remedy this problem, the Human Resources Development Office-Government of Canada (HRDC) spearheaded discussions that focused on increasing each community's capacity to meet the personal and professional needs of the individuals living in that community. HRDC's goal was to provide educational opportunities for the community so that people could access the required knowledge and skills they needed either to secure or retain employment. In other words, they would have enough income to ensure an acceptable quality of life and therefore be independent of government subsidies.

With regard to the people in the community, most were aware of the need to keep their skills and knowledge current in order to remain competitive in the workplace, especially in a knowledge-based society. Related to this need were competing demands on an their time that occurred as a result of family and work demands. As a rule, adults faced with these realities are attracted to learning opportunities that offer them some flexibility with regard to the time and/or location of the delivery.

Addressing the Various Contexts

As a way to realize the vision outlined in the college's restructuring documents with regard to enhancing learners' success and their access to learning opportunities, a decision was made to endorse a college-wide learning approach referred to as a distributed learning environment. This approach was adopted to increase flexibility in the learning environment and to enhance the college's profile in a highly competitive training market.

To support the operationalization of a distributed learning environment, the college allocated limited fiscal and human resources to the development of learning opportunities that would address the learning needs of adults who took courses offered on campus, as well as of those who preferred to study at home. This latter group included individuals who were either geographically close to or at a distance from the college campus. The distributed learning environment was structured in such a way that, at any point in the learning process, the students could interact with faculty and staff, regardless of time and geography. These interactions included face-to-face communications, interactions facilitated by the use of educational technology, telephone access, and E-mail contacts. All these interactions had to be structured and supported.

As evidence of the college's commitment to the establishment of a distributed learning environment, senior administration established targets and timelines for the conversion of curriculum based on traditional delivery methods to the use of alternative delivery methods and then communicated this information to staff and faculty. To support these ambitious plans, the college established the Bell Institute for Learning Design (BILD) staffed by seconded faculty trained as learning designers. The BILD served as a resource

for front-line faculty and staff who were involved in the transition to this new learning environment.

During this time of change, the college's administration asked the satellite campuses to examine their mandates in light of the new directives. This request required each satellite campus to provide their specific community with an access point to the post-secondary opportunities available at the main campus. According to the new directives, the delivery of on-site, full-time, post secondary programs using traditional teaching methods would no longer be available at the satellite campuses, because the resources needed and the required infrastructure for the delivery of courses and supports for students were not available. The college's administration developed action plans for the satellite campuses that outlined how the mandate could be achieved through the use of alternative methods for curriculum delivery.

In the satellite community where I work, I negotiated a plan with the local HRDC officer that could make use of the campus and its existing resources as a venue for enhancing the community's ability to access a broad array of lifelong learning opportunities for adults. The community plan, which was developed in keeping with the mandate of the college, included the college and HRDC making initial capital investments for the enhancement of the infrastructure of the campus.

The college's announcement that it would be developing a distributed learning environment, including learning resource centres on all campuses, and the establishment of BILD to support and to teach instructors and staff about this new learning environment, was important during the negotiation process with HRDC. At this point, HRDC interpreted the news of these initiatives as confirmation of the availability of a

wide array of courses and programs to meet the diverse learning needs of the communities in which the college had a campus location. Those who were negotiating this arrangement finally reached consensus and agreed upon the following objectives. In brief the community-based project would aim to:

1. Establish delivery efficiencies in the provision of services and programs to the community.
2. Use alternative delivery methods at the college to enhance access to training opportunities for adults in a variety of communities.
3. Customize the provision of service (programming from the academic upgrading level through to the certificate and diploma levels) in order to meet the defined needs of the community profile.

HRDC provided funding for the capital expenditures incurred in the establishment of an open-access learning lab at Campus B. The college undertook structural modifications at the campus in order to provide a suitable space for 30 multimedia computer workstations in an open learning area. In addition, the college had the hardware connectivity to the main campus enhanced during the renovations. It also purchased the equipment required for the use of audiographic learning technology on campus for curriculum delivery.

Assessment of the Need

I decided that a formalized needs assessment to determine if the Personal Financial Planning course should be delivered using audiographic technology would not be needed. The rationale for this decision was based on two factors: as Campus Operations Leader, I

had at my disposal recent sources of data from a variety of sources that supported such an undertaking. As an employee of the college at a satellite campus for 12 years and as a member of the community for over 15 years, I was aware of the community's interest in accessing a broader array of training opportunities. Actually, a detailed telephone survey of the community asking for input about the role of the campus in the community and the type of programs and offerings needed had been conducted during the preceding year as a part of the campus restructuring project. The analysis of the responses from this survey supported the conclusion that individuals in the community, by virtue of living at a distance from the main campus, had many difficulties accessing learning opportunities that were of interest to them and/or were required to retain their employment. This survey also drew attention to the fact that the recent decrease in the availability of financial assistance from the government, in the form of student loans, made travelling to the main campus an unrealistic expectation.

Data drawn from the *Part-Time Studies Provincial Survey*, in which our college participates every 2 years, also provided important data. It confirmed the fact that one of the most important factors which influenced an individual's choice in picking a specific course was the availability of the course at the campus in closest proximity to where the person lived.

Campus records were another good source of data, because these showed that the community had an interest in taking courses at the campus. More importantly, these records pointed out a high frequency of class cancellations because of insufficient registrations in many courses because the tuition from a small number of students would not cover the delivery costs of the course. Further analysis of campus data tabulated from

course evaluations called attention to the fact that the courses offered by the college were ranked as good or excellent, confirming the belief that the low number of registrants in some courses was not a quality or satisfaction issue but rather one of population size.

The dilemma facing the campus was not going to be resolved easily. The rapid changes occurring in all work environments required that employees in a variety of work settings update their skills in order to survive in a changing job market. Another significant fact was that the community served by the campus was not experiencing a substantial increase in population: therefore, recruiting sufficient registrants to justify the offering of the courses requested presented challenges.

The data supported the need for educational institutions such as the college to continue to offer a variety of course offerings, but to do so in a manner that provided open access for individuals who did not live in close proximity to the main campus. From the perspective of the college, the provision of courses using educational technology was one way to meet the learning needs of small groups of individuals who were located in various geographical locations at a distance from the main campus.

Planning the Study

I chose Caffarella's (1994) Interactive Model for Program Planning in this study for the following reasons. The model provided me with the flexibility required in mounting a study that involved multiple stakeholders who had a variety of vested interests in the outcomes of the study. The model encourages the planner to consider planning as a process that consists of a set of interacting and dynamic elements that need to be considered as the planner designs the program. The specific components and ordering of

substantial increase in population, therefore recruiting sufficient registrants to justify the offering of the courses requested, created challenges.

The data supported the need for educational institutions such as the college to continue to offer a variety of course offerings, but to do so in a manner that provides open access for individuals who do not live in close proximity to the main campus. From the perspective of the college, the provision of courses using educational technologies was one way to meet the learning needs of small groups of individuals who are located in various geographical locations at a distance from the main campus.

Planning for the Study

I chose Caffarella's (1994) Interactive Model for Program Planning as the outline to follow in this study. This decision was based on the fact that the model provided me with the flexibility required to succeed in mounting a study that involved multiple stakeholders, who had a variety of vested interests in the outcomes of the project.

Establishing a Basis for the Planning Process

The planning of the program did not follow a predictable linear path and a single event did not provide the impetus to conduct the study. As outlined in Chapter One, the study began as the result of a convergence of the thinking and planning of many different stakeholders groups that worked at the college including educators, students, and support staff. These groups had as a common goal to provide quality programming for adults, yet their own vested interests had to be examined at various times throughout the study, because of the impact this new delivery mode had on their established roles and practises. I will discuss this issue in greater details later in the chapter.

audiographic technology would contribute valuable information that the college could use in its planning process. They also determined a critical path for the study that included an assurance that a course would be delivered in September 1998 using an alternative delivery method.

The team members from the campus where I was Campus Operations Leader were particularly enthusiastic about the delivery of a course in a new way and taking part in my study. They were aware of the fact that the outcomes of the study could have long-term implications for the viability of the campus.

Identifying Program Ideas

A recent needs assessment completed for MBS substantiated the need for and interest in a course on the topic of financial planning. In addition to this fact, TDS registration data for the part-time study courses in financial planning at all of the college locations had been positive. Based on this information, a 45-hour credit course entitled Personal Financial Planning that had been developed by the faculty in MBS in conjunction with the Canadian Institute of Financial Planning, was considered a reasonable choice. Other reasons for choosing this particular course was the fact that the course (PFP) was the introductory course for the Certified Financial Planner (CFP) certificate designation; it was also a course that was of general interest to the community, especially those who were involved in retirement planning. This course, planned as the first in the series, had been designed to provide a foundation for the more technical courses in the certificate program of studies. The course begins with an overview of financial planning, followed by a more detailed investigation of managing money, including tax implications. Specific planning areas dealing with education, investments, retirement, risk

management, and estates are explored at an introductory level. The learning designers, familiar with the applications and limitations of audiographic technology for the delivery of curriculum, reviewed the learning outcomes, the course resources, and the teaching methodologies used in the PFP course. They decided that the curriculum was suitable for adaptation to a new delivery method.

Since all campuses had invested in audiographic equipment and resources from the centralized information technology department, the decision was made to expand the study to three campuses rather than have the delivery limited to two campuses only. This decision was based on the college's need to gain an accurate assessment, from a staffing and hardware perspective, of its technological capacity to support this delivery method across the college's catchment area.

Preparing for the Transfer of Learning

In preparing for the transfer of learning I chaired a campus meeting at Campus B during which I outlined the project's description, methodology, and intended outcomes in order to be sure that all members of the campus understood the study. A similar meeting was held at the other satellite campus that was to be involved in the study. At these sessions the campus teams identified their learning needs that had to be addressed immediately so they could support the study in their respective locations. Some of these needs included; testing the equipment with on-site personnel to determine who had proficiency in the use of the equipment, identifying the classroom that would be suitable for the transmission, and determining the lead staff member who would be the on-site contact for the class and instructor during the course. At each location I planned and identified specific resource individuals at the main campus who could help the teams. In

addition, the instructor who was assigned to deliver the course met with the learning designers so that he could become familiar with delivery strategies which would be suited to audiographic technology. These sessions involved the practise of delivery strategies suited to audiographic technology, the adaptation of current course resources for use with audiographic technology, and the formulation of a variety of evaluation plans that the teams and I could use to assess accurately whether or not the learning outcomes of the course had been achieved.

Formulating Evaluation Plans

As co-ordinator of this study, and in my role as Campus Operations Leader of our satellite campus, I was interested in gathering evaluation data based on the perspectives of each stakeholder group involved in the study. After seeking advice from several knowledgeable people, I decided to gather general anecdotal information about the success of the study at the two distant sites (Campus A & C), and to gather more detailed information from the stakeholders at Campus B, where I was located. These included the students who took part in the course, the support team, and the instructor who delivered the course. My rationale for concentrating on Campus B was that I had direct responsibility for the study at this location, and as the Campus Operations Leader, I had a vested interest in the study at this location because of its implications for the long-term viability of the campus. In my view, it was important to design both formative and summative evaluations so that revisions to the course delivery could be acted upon from week to week and the students directly involved in my study could have every opportunity to be successful.

Determining Schedule, Facilities, and Staffing Needs

When I met with the campus support team, we made the decisions about the class logistics. A midweek class day and class time (Wednesday from 6:15 p.m. to 9:00 p.m.) were selected based on the advice of the learning designers who were familiar with the requirements of delivering a course using audiographic technology. The midweek class would provide the instructor with the time to deliver the upcoming week's lecture in Powerpoint format, so that the learning designers could download the lecture to the satellite campuses on Monday, for use on Wednesday. Altering the class time from the traditional time of 7 p.m. to 10 p.m. was a way of securing additional technology support from the IT department at Campus A, in the event that the staff at Campus B and C required support. Campus A technology staff worked each evening until 8 p.m.

I planned to adapt the classroom setting at the Campus B to meet the specific requirements that would enhance the transmission of the course and promote student comfort and success. Therefore, I arranged the furniture in such a way as to provide both an unrestricted view of the SMART board, and proximity of the students to the polycom so that the voice transmissions would be clear. I planned to use modifications such as sound baffles and curtains that darkened the room to optimize the quality of the sound and picture.

After the support team had been trained in the use of the audiographic equipment, I provided them with manuals that outlined procedural protocols that could be used for reference at a later date. I also introduced the support team to the learning outcomes for the course. I felt it was important that they have an overview of the course objectives and

used for reference at a later date. I introduced these individuals to the learning outcomes for the course. I felt it was important for the staff to have an overview of the course objectives and outcomes before the course began, so they would have a better understanding of the modifications they might be asked to support during the delivery of the course.

Marketing Plan

The marketing of the course occurred in two stages. When the open access learning lab was completed in the May of 1998, I organized a community-based open house for invited guests. My intention was to acquaint key individuals in the community with the capabilities and potential applications of the AGT in our community. To facilitate their understanding of the capabilities of AGT as a medium for the delivery of educational programming, I provided a "show and tell" session during the open house. In conjunction with the B.I.L.D. at the Campus A, I arranged for a demonstration of the technology during which I provided the guests with an overview of the equipment. They were then lead through a sample lecture that included a short tour of the Smithsonian Museum in Washington using the technology via the Internet. A faculty member in the Collections and Conservation Management program at the college provided a commentary that augmented the on-line tour. We had media coverage for the open house. This was a good way to make the broader community aware of the capabilities that existed at the satellite campus and to encourage them to access learning opportunities at the main campus from our satellite campus.

The second component of the plan involved listing the course description in the college's part-time studies calendar, where it was noted that the course was being

directed to a section in the calendar that provided a student profile outlining the characteristics of a successful student studying in a non-traditional learning environment. The intention of the profile was to encourage people who were considering the course to compare their learning characteristics to those of a successful student in a non-traditional learning environment. They were asked to decide if there was some similarity. If their characteristics matched those in the profile, they could consider themselves good candidates for this kind of program delivery.

Following the 5 months of planning and preparation for the study, the campuses were prepared to deliver a course using an alternative delivery method. TDS reported that there had been sufficient registrations at each location to justify delivery of the course. At the main campus they had started a waiting list for a second intake of students because there was a size limitation on the room being used for the class using audiographic technology.

Program Implementation

In September 1998, 8 students enrolled in the class at Campus B, 20 at Campus A, and 9 at Campus C. At Campus B, 3 of the students took the course for personal interest only and 5 participants stated that their intention was to take the course as the first requirement for the CFP designation, which they hoped to complete by taking additional courses.

Evaluation Plans

At the end of each class from Week 2 through to Week 14, the instructor asked the students at all locations to participate in an informal formative evaluation process that focused on delivery issues, by responding verbally to the following questions:

- What was the high point of the class tonight?
- What was the low point of the class tonight?
- How can the learning environment be improved to enhance your learning experience?

The students at Campus B only were also asked to participate in a written formative evaluation at Weeks 3, 6, and 9, and a summative evaluation at Week 12.

I conducted a debriefing session with the instructor at the end of the course. I asked him to assess the course from his perspective of delivering the curriculum, and identify how the use of audiographic technology had enhanced or created challenges for him. He was well suited to make these assessments as he had previous experience delivering the curriculum using traditional methods. The instructor also evaluated the training sessions provided by the learning designers prior to the start of the course, and the ongoing supports that he received from BILD during the delivery of the course.

The staff that supported the course delivery at Campus B participated in a focus group that I facilitated. Their feedback specifically focused on the mechanics of the course delivery rather than the course content. In the focus group, the staff was asked to recall the ongoing revisions that they made during the course and to assess the impact and success of these interventions. A focus group was not organized for staff at the other campus locations.

One week prior to the start of the course, I met with the staff at the various campuses, and they all agreed that the planning and preparations to date had been very comprehensive. In addition, those who had been part of the planning and preparation were excited about being involved in the new initiative. When asked about the professional development that had been provided, their feedback was very positive. The following weekly feedback refers primarily to the information gathered at Campus B.

Week 1

I welcomed the students to the College at Campus B, and the audiographic technology suite. I provided an explanation of the equipment in the room and I asked each student to draw on the interactive SMART board. At that point, I introduced the campus staff who were scheduled to support the transmission of the program each week. I also provided the students with an orientation brochure specially designed for Campus B. Next, the instructor introduced himself using the audiosystem from the transmission site at Campus A. He provided an overview of the aims and learning objectives of the course and then gave a description of the required course resources that the students would need to purchase. In order to create a comfortable atmosphere in this new learning environment, the instructor reviewed the principles governing student and teacher etiquette during an audio conference. These principles included: only one student should speak at a time; students should state their name and campus location prior to making comments; and body language should be limited and voice inflections should be minimized as they are not understood in an audio conference, because they are not relayed accurately.

The graphic part of the transmission was not available at the beginning of the class, due to a freezing of data on the lines. Although this problem was remedied quickly, the

transmission of the Powerpoint presentation to the SMART board was slow. The resolution of the slides at all locations was of questionable quality. The quality of the graphics at Campus B was reduced because the lights could not be completely turned off in the audiographic suite; otherwise the participants would not have been able to see anything in the room. The trial transmission sessions in the audiographic suite at Campus B, prior to the course start, had all occurred in the daytime so sufficient light came through the curtains, but this did not occur at night.

The audio component of the transmission, which had been adequate at the start of the class when only the instructor was speaking, deteriorated as the students asked questions at the different sites. Background noise at all three sites, created by moving chairs, coughing, and the movement of the instructor when he was speaking, was also a problem.

Students in the course at the Campus A had not understood from the notation in the part-time calendar, regarding the use of AGT, that they would be part of the study. Consequently, they were not prepared for the use of the technology in their classroom. They questioned why their class was being used for transmission to the other locations.

Modifications. Following the first class, I made the following modifications to the delivery of the program based on discussions with the learning designer and the technical support staff at the main campus:

1. The Powerpoint presentation would be imported by 5 p.m. and copied to the hard drive at each location to eliminate the possibility of the data freezing on the lines.
2. The site-to-site audio linkage would be established at 5 p.m.
3. A common resolution of 640x480 true would be used at all sites.
4. A lapel microphone was purchased for the instructor.

5. Floor lamps were purchased to provide indirect lighting where this was not available in the rooms, thus allowing the overhead fluorescent lights to be turned off in order to improve the clarity of the slides on the SMART board.
6. The staff at all sites would review with the students possible sources of background noise and the students would be shown how to activate the mute capabilities of the polycom.

Week 2

The quality of the visuals and sound were significantly improved during this transmission. I introduced the students to the concept of providing verbal feedback to the instructor about the session at the end of each session. I also explained the purpose and the process for gathering written feedback at Weeks 3, 6, 9 and 12.

The students complained of fatigue during the 3-hour class even though the instructor provided breaks in the lecture presentation for off-line work sessions. They attributed this fatigue to their need to concentrate for extended periods of time to voice-only and SMART board transmissions, without the body language of the instructor to assist in the interpretation of the content. The lack of visual cues from the instructor created difficulties for the students when they were asking questions, as well as when they tried to alert the instructor to the fact that the information being delivered was confusing to them. At the end of this class, the students at Campus A were informed that the instructor would be transmitting the lecture from Campus B the following week.

Modifications. Following the second class I initiated the following modifications:

1. A scheduled break was built into the class time. It had been expected that this would happen during the off-line group work periods, but it was not occurring at all sites.

2. An on-site student monitor role was considered. This individual would be responsible to alert the instructor if his presentation was not being understood, to initiate the cue for asking a question, as well as to distribute and collect class materials as needed.

Week 3

The presence of the instructor at Campus B for transmission of the lecture was well received at that location. At this time, I also arranged that the Week 4 lecture would be transmitted from Campus C. The changing of the site for the transmission was well received by the students at Campus B and Campus C, as they were interested in meeting the instructor and having a one-on-one discussion with the instructor about their upcoming assignments.

Informal feedback from Campus A, relayed by the BILD learning designers confirmed the fact that the students at Campus A were dissatisfied with use of audiographic technology in their classroom. They complained that the calendar had not made it clear that they would have audiographic delivery for the course. They also were upset by the fact that the instructor would be travelling to the other campuses. In other words, when they signed up for the course they had not bargained for these arrangements.

Modifications. Following the third class, I established the following modifications:

1. The slideshow downloading was moved to 3 p.m. to avoid the "dinner time" line usage that we thought was slowing the transmission of the slideshow.
2. The file once received would be copied into the SMART board notepad in an attempt to improve the speed of the transmission.
3. An instructor was hired for the remainder of the course for the students at Campus A. In other words, this group would no longer be part of the study.

4. Based on the above changes, the transmission each week to the Campuses B and C either would be from a studio at Campus A or at one of the satellite locations. The files would be imported to Campus B from Campus C. An audio link to Campus A was maintained from Campus B and Campus C, in the event that technology support was required during the class.

The students at Campus B at the end of Week 3 completed a brief written evaluation. A similar type of evaluation was also completed following Weeks 6, 9 and 12. These evaluations ensured that all students had an opportunity to express concerns so I could address these as they arose. The students at Campus B were asked to answer the following questions and to offer comments. Ample space was provided for the comments, and if extra space was needed, the student was advised to write on the back of the page:

1. Does the learning environment in the classroom assist you in meeting your learning needs? Yes/ No Comments:

2. Have you been able to access the various learning supports offered by the instructor including a toll free phone number and academic advising, or by the library including books and research techniques that you requested and/or needed? Yes/ No
Comments:

3. Have you found the course materials and class activities helpful? Yes/ No
Comments:

The written evaluations from Campus B were generally positive about the learning experience and the responsiveness of the support staff and instructor in addressing their

learning needs. Campus B continued to ask for a classroom monitor to serve as the point person for communication with the campus staff and instructor.

Weeks 4-7

The sound and graphic transmissions were satisfactory at Campus B. The students appreciated the opportunity to provide ongoing feedback about the study. In this way they felt they were an integral part of the study. Support staff from Campus C reported attendance problems, but this did not happen at Campus B. At the beginning of Week 4, a student monitor was assigned at Campus B. She facilitated the class interactions with the instructor and assisted in the collection of assignments that the campus staff would then send to the main campus. At this point no other modifications were suggested.

The written evaluation process at the end of Week 6 did not reveal any new issues. The student monitor at Campus B provided the on-site link with the campus staff and the instructor that the students had requested. The reasons for the attendance issues at Campus C were not identified. My follow-up telephone calls to the students at Campus C regarding their attendance did not reveal any common reason for their absences. They gave a variety of reasons, but none seemed to relate to the delivery method being used for the course.

Weeks 8-10

At this point, I encountered difficulties with the efficient delivery of assignments from Campus B and Campus C to the instructor. Seemingly, the instructor was not receiving the assignments on time, and they were not coded according to the site from which they originated; consequently, they were not being returned to the right student. This problem

posed difficulties for the students because they did not receive feedback from the instructor before the next assignment was due.

The written evaluations from Week 9 did not raise any new issues. The students' primary concern was the delay in receiving their corrected assignments from the instructor.

Modifications. Following the tenth week, I made the following modifications:

1. A sign-in system was established for assignments that had been collected at Campus B and Campus C.
2. A coding system, based on campus was established and used when the tests were being sent to the instructor for grading. Correct coding of the assignments and tests ensured that they were returned promptly to the correct campus and student.

Weeks 11-15

The difficulties with the assignments had been resolved. Six of the 8 students at Campus B wrote the final examination and were successful. Two students chose not to write the exam. One student had attended the course for audit purposes only, and the other student was not able to prepare for the exam for personal reasons. Four students registered for the next course in financial planning that was planned to be offered at the main campus (Campus A) using a traditional classroom delivery method.

The evaluations collected at Week 12 noted that the modifications that had been established to ensure the prompt return of the assignments had been effective. In the comments section, the students noted how much they had appreciated the responsiveness of the campus staff at Campus B in addressing their concerns as these arose during the course.

Evaluation Process

I decided that the summative evaluation of the study would include more than the test results of the students who participated in the actual class. I planned that all stakeholders at Campus B would take part in the evaluation. This decision was based on the fact that I had negotiated the cooperation and support of a number of stakeholders at the college before I launched the study. Each of these stakeholder groups had contributed generously of their time and energy to the implementation of the study, and each group had a particular interest in the outcomes of the study. They were well aware that the results of the study could significantly impact their current job descriptions if the college adopted an alternative delivery method in the future.

Another decision made at the outset of the study was that both formative and summative evaluations would be collected. The decision about formative evaluation was based on the fact that as a college we are committed to student success and customer service. In order to maintain these goals, the formative evaluation data that I collected on a consistent basis throughout the duration of the course alerted me to the fact that changes in the course delivery had to be made if the course delivery was to be successful.

For the summative evaluation, I asked each stakeholder group at Campus B, which included the students enrolled in the course, the instructor of the course, and the support staff (including the learning designers), to assess three dimensions of the learning experience from their perspective: *the learning environment* that included an assessment of the equipment that was used, the set up of the room, and the quality of the sound and

visual transmissions; *the learner supports* that included the role of the monitor, the campus support staff, the availability and quality of interactions with the instructor, and the orientation of the student to the delivery mode; *the learning materials/resources and activities* that included the handouts, scheduling of classes, and the types of in-class activities.

Feedback About the Learning Environment

The students found the audiographic room adequate and comfortable. The view of the SMART board with the indirect lighting was good and sound transmission, with the use of the lapel microphone, improved after Week 2. Additional attempts to reduce the echo and background sounds had not been completely corrected because the costs of installing additional acoustical tiles in the classroom where the transmissions were received was not possible financially. The fact that a dedicated room at Campus B was used each week for the course delivery was ideal in that the equipment was not moved and time was not spent each week in orientating the SMART board. This situation was not possible at Campus C because of the level of activity at that campus and the fact that they did not have a dedicated room. The positive attitude of the campus staff and their willingness to address the students' problems was appreciated.

Anecdotally, one student who was enrolled in the class at Campus A, reported that when she was delayed at work one week she found it was more convenient and timely for her to attend the course at Campus B, otherwise she would have missed the class. Other direct quotes from students at Campus B included: "I have taken classes at this campus before and sometimes the room was changed week to week. I like it that we don't have to change our room every week." Another said, "This setting at the campus (B) is really

comfortable....we have sufficient space and our concerns about the lighting and sound were addressed very quickly."

The instructor felt comfortable with the technology and enjoyed the challenge of trying out and learning about a new delivery system. He welcomed the addition of the lapel microphone because he could focus on the presentation rather than his position in the room, as would have been the case if he used a desk microphone. He expressed an interest in being involved in the course again if audiographic technology would be used for delivery. The instructor shared these thoughts: "I like a challenge. Becoming familiar with teaching techniques that are suited to this newly designed learning environment has been interesting."

The support staff was frustrated with the amount of time involved in downloading the files to the SMART board. This situation improved when I moved the downloading to an earlier time in the afternoon and imported the files individually into the SMART board notepad rather than as a file package. By having only two points in the transmission after Week 4, because Campus A had withdrawn from the study at this point, the downloading time sped up. One staff member commented: "I never thought we would achieve the goal of delivering the course---there were so many problems at first." Another said, "Now when I look back, it was worth all of the work. Knowing how important it was to the students to attend classes close to home was the only thing that kept me going in the early weeks of the course."

Feedback About the Learner Supports

The student monitor improved the delivery system at Campus B, and in hindsight this person should have been there from the first class. The students reported that they felt

more confident handing their assignments to the monitor, who in turn sent them to the main campus for grading. The students valued the instructor's on-site visits and were more comfortable in raising questions during subsequent classes after meeting him personally during his initial visit to the campus. The instructor visited each satellite campus twice during the course. The students felt poorly prepared regarding the full impact of the audiographic technology delivery. They claimed that more time was required at the beginning of the class to become more familiar with the technology. One student wrote:

We didn't feel well informed that we were part of the pilot. I wonder if you would have had even more interest if you had communicated the pilot more clearly? Lots of people like to be part of new ventures. It might have increased the enrolment.

Five students at the Campus B expressed an interest in taking the next course in the CFP certification program using audiographic technology for delivery. They felt they could be successful as learners in this kind of environment. Also, they were not able to travel a distance each week to the main campus in order to participate in the next course.

The instructor enjoyed the opportunity to visit the different campus locations in order to meet with the students. He said, "Visiting each group has really helped me to connect with the class as now I have a mind's eye picture of the students when they ask a question. I like this." The instructor experienced some frustration with the initial process used for the delivery of the assignments, prior to the establishment of a reliable method of coding the assignments from a particular campus. By the end of the course, the instructor rated the students' achievement in this course as comparable to students in courses delivered in a traditional classroom setting.

The campus staff raised issues relating to their scheduled hours of work and the timing of the class. Their primary concern was their inability to communicate with the instructor in a reliable manner. The support staff worked daytime hours while the instructor was not available during these hours because of other work-related responsibilities. They also found it very difficult to deal with the students' initial frustrations with the method of delivery and the equipment. They suggested that students enrolling in a course using audiographic technology should be required to complete a more detailed learner profile. If the students had been able to review this profile with someone prior to enrolling in the course they may have been better prepared for the new delivery method. The staff also felt that audioconferencing etiquette should have been better explained during the first two classes, because this would have eliminated some of the difficulties that the instructor and students encountered during the earlier classes when two people were trying to talk at the same time.

Feedback About the Learner Materials/Resources, Activities

The students found the Powerpoint presentations tedious after a number of weeks. Some of their comments included: "I find I am so tired after the classes. I really need to concentrate in order to pick up the audio-only communication without any body language and then all of the reading on the SMART board." Another student said, "We need to do more group assignments off-line. It would add interest to the course and give us a break from listening and reading." Comments with regard to the SMART board stressed that the board was not used to its best potential. The course resources/books were rated as adequate. The students suggested that more small group activities should have been used at each site as a way to encourage the students to apply the course content to their own

experiences and to allow for group problem solving. The students expressed frustration in not receiving their corrected assignment and tests in a timely manner. The following comment is typical of several other comments I received: "I have been away from school for a couple of years, so I need to know if I am on track with my assignments. Not having the previous assignment when I start the next one is difficult for me."

The instructor was disappointed that he did not get to know the students as well as he does in other classes where he has face-to-face contact. He did not feel at ease in calling them by name and prodding them to answer questions until later in the course, after he had made his first visit to each campus. He also regretted that he only used examples for discussion drawn from one community rather than from each of the communities in which the satellite campuses are located. In his view, if he had used a broader selection of examples he might have been able to elicit more input from the students at all locations.

The support team at each of the campuses reported their frustration relating to the delivery of the assignments and tests to the instructor. This situation was later remedied in that a mechanism was established by the support staff that ensured accurate delivery to the student, after the assignment was corrected. They did not have any other evaluative comments about the materials, resources, and activities.

The delivery of the PFP course using audiographic technology provided an excellent learning opportunity in two ways. First, the students at Campus B felt it had been a positive experience. Second, the administration at the college received some concrete feedback about the delivery method that they could then use in planning future learning opportunities in a distributed learning environment. In the final chapter that follows, I

discuss my study in light of the literature in chapter 2. I then draw conclusions based on this analysis and make recommendations.

CHAPTER 4

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

In this chapter, I examine the outcomes of the study in light of the literature. I begin by discussing the importance of lifelong learning for adults in a knowledge-based economy. I then discuss the concept of a distributed learning environment, as a way to provide access to learning opportunities using educational technology. Students can be successful in this type of environment if they are provided with appropriate supports. In the final section, I present conclusions and recommendations for adult educators interested in using a distributed learning environment to promote successful lifelong learning.

The Adult as a Lifelong Learner

In this first section of the chapter, I begin by discussing lifelong learning as an integral element in the personal and professional development of adults. I then focus on the importance of acknowledging adult learner characteristics in planning programs, and I end this section with a discussion of the adult as a self-directed learner.

Lifelong Learning

The concept of lifelong learning is not new; in earlier periods, however, the references to lifelong learning evoked both political and social reactions, and there were numerous debates about its utility. The debates generally centered around its value, whether it was for personal fulfilment or for the economic gain of society. The research of Houghton and Richardson (1974), and Becker (1975) explored this issue but did not resolve it. In fact,

the issue about the value of lifelong learning is no longer debated. Rather, adult educators today are being challenged by adult learners to provide learning opportunities so that they can remain competitive in the workplace. In addition, they are looking for learning opportunities that will help them to improve or enhance their quality of life. In other words, adult learners have a variety of motives for seeking educational opportunities and the option of lifelong learning is almost always embraced. The students in my study are one such group who are committed to lifelong learning.

The findings of the study are consistent with the literature (Coffield, 1999; Hatton, 1997; Kintzer, 1997) in that the students in this study had a variety of motivations for participating in the Personal Financial Planning (PFP) course. For example, in the class of 8 students at Campus B, 3 of the students expressed no interest in taking all of the courses required for certification as a financial planner; they were only interested in gaining sufficient information to manage their personal finances. Of the remaining 5 students, 2 expressed interest in additional courses and 3 were undecided about their long-term goal at the outset of the course. It also became apparent during the study that the students wanted the examples that were used during the course to have personal relevance to their current life context. In my opinion, their ages that ranged from 25 to 65 years of age influenced the expected outcome of the learning experience. For example, the youngest student, who was beginning a family, had a keen interest in learning how to start an educational savings plan for his small son. One student in his late 50s was seeking direction on how to invest his retirement funds.

Kintzer (1997) explains that adults are interested in learning opportunities that enhance and complement their existing skills and focus on their interests and needs at a

particular stage in their life. The findings of the study support this idea. The students that enrolled in the PFP course were interested in specific information that they could use to resolve current issues in their lives. They also expected that the discussion topics in the course would relate to their life context so they could engage in the off-line discussions to a greater extent. Their personal connectedness to the context of the discussion questions appeared to have a greater significance to them than the activity of completing the discussion task or the assigned small group work. In fact, the instructor regretted that he had not used examples from all the communities where the course was delivered. He found that some of the students were unable to connect personally to the local examples that he used, because they did not live or work in that particular community.

Hatton (1997) makes a similar point when he explains that adults are primarily interested in learning that focuses on an individual's attainment of knowledge. He emphasizes the significance that adults place on this type of education, rather than the type of education that he defines as an observable activity; that is, education that focuses on the delivery of information and a demonstrable outcome at the end. Chapman and Aspin (1997) also support this view. They point out that the adult learner is interested in the intrinsic value of the learning experience that will contribute to their personal development, creating for them a more rewarding life, rather than the extrinsic value of a learning experience that is linked to the attainment of a credential. Of the 8 students participating in the PFP course, only 2 expressed interest in additional courses that would lead to certification.

Chapman and Aspin (1997), and Coffield (1999) emphasize the fact that when adults pursue lifelong learning opportunities they are looking for experiences that are accessible, affordable, and available at a convenient time and place given their other life commitments. The students in the study reported that accessibility was a key determinant in the selection of a particular learning opportunity. One of the students stated:

I never would have been able to take this course if it had only been offered at the main campus. I know we are putting up with some adjustments because of the audiographic technology, but it is worth it. I don't have access to transportation. Offering the course locally allowed me to participate.

Another student added:

I can read a book about the different topics related to financial planning and even understand the facts, but being able to participate in a class really helps me learn the concepts and be able to apply them as I want to.

Hunt (1999) claims that accessible learning opportunities are of great significance to the adult interested in lifelong learning. She points out that the adult learner is influenced by personal or professional life events that they are currently experiencing. Consequently, they will seek out learning opportunities that augment their understanding of these events and are offered at a time and in a way that is understood. It was evident in reviewing the results of the study that adult students need very clear descriptions of the format and structure of the learning opportunity and learning environment. Returning to school, at least for some students, can add to the stress of other life events that they are experiencing. Consequently, they do not react favourably to unexpected changes in the routine of the class, such as they experienced when the instructor was moved from site to site for the transmission of the lecture. As well, the study highlighted the fact that adults expect to be informed of the prerequisite skill and knowledge that they will need in order

to be successful in a particular learning activity. Some of the students in the PFP course expressed frustration about the fact that they were not well informed about the level of computer literacy required prior to enrolling in the course. The lack of familiarity with the technology for specific students created an uncomfortable situation and inhibited their ability to learn.

As Hunt (1999), and Chapman and Aspin (1997) explain, the adult's commitment to lifelong learning that develops very early in life motivates them to become engaged in various formal and informal learning opportunities throughout their lifetime. These individuals often require some direction and guidance in the selection of a truly appropriate learning experience that will address a particular need in their life or, what Havighurst (1972) refers to as the "teachable moment" (p.7). The student who wanted to start an education savings plan for his young son and the student seeking direction on how to invest retirement funds are good examples. The teachable moments for both of these students were different, nevertheless equally motivating.

The students who took part in the study mentioned that their personal hesitations about enrolling in the personal financial planning course were allayed when they had the opportunity to discuss the learning outcomes of the course with staff at the satellite campus, prior to enrolling in the course. Even though most of the students had completed the profile of the distance learner in the part-time studies calendar, they had not completely understood all the implications of studying in a distributed learning environment. One student, prior to enrolling, requested and attended a session with an academic counsellor at Campus B. She was interested in having an assessment of her writing and comprehension skills in order to reassure herself that she could handle the

course content. I invited the students who would be attending the course at Campus B to come to the campus and examine the course text, to look over the course content, and to determine if what was being offered would address their needs. The students who accepted the invitation reported that these activities reassured them that the course was suited to their needs. The findings from my study were similar to those of Candy (1991), who points out that the adult learner needs to have a clear understanding of the process and the products of the learning activity. The need for this kind of understanding is likely to continue as lifelong learning becomes an essential feature of our educative society.

The Importance of Acknowledging Adult Learners' Characteristics

The literature pertaining to the adult learner points out that adults have unique characteristics that educators need to take into consideration when they design appropriate learning experiences. Thomas (1988), Knowles (1978, 1980, 1989), and Knowles and Associates (1984) explain that adult learners often do not have a definitive motive or easily expressible reason for entering a learning experience. For example, their rationale for engaging in a learning activity might be to understand better a life event, to acquire new information, or to have an opportunity for the exchange of ideas with a group of people.

The students who took part in this study evaluated the lecture component of the course as interesting and worthwhile. They noted that the in-class discussion of the lecture helped them to personalize the information. One student stated:

I have read lots of books about financial planning, but I really need to hear other people's interpretation of the concepts, because that is how I really learn. By

doing this, the concepts are not just words on a page and I can then apply the ideas to my own experiences.

The comments from the students in the study confirm the fact that adult learners enjoy learning activities that provide for self-directedness. For this reason, they appreciated receiving a list of suggested readings for each class because in this way they could review the content for the next class, if they felt this preparation would help them to participate more fully in the upcoming class discussions.

MacKeracher (1996) describes the adult learner as a composite of previous life experiences. She identifies five characteristics of adult learners that include: physiological factors, past experiences, time perspectives, the self, and self-direction. As she explains, adult educators need to be aware of these characteristics in their planning and delivery of adult learning activities. The BILD learning designers who worked with the instructor took these characteristics into consideration, as they planned the PFP course delivery. For example, the design techniques included off-line activities so that the content being presented could be related to the students' previous experiences during the small group discussions at each site. Another objective of these off-line activities was to address the physiological needs of the students. I discuss this other objective in greater detail later in this chapter.

Slotnik et al. (1993) point out that if adult characteristics are not considered in the planning of a course and appropriate accommodations are not incorporated into the learning activity, the adult learner may be wrongfully labelled as disadvantaged because of age. They caution that attributing an adult's inability to be successful academically in a formal school setting solely to age related factors is incorrect. Slotnik et al. provide

evidence that most of an adult's learning difficulties are ameliorated when the information is presented at a slower pace and in a non-competitive environment. In this study, age was not a factor in student success in the course, because the older students in the PFP course, according to the instructor, were equally as successful as the younger students in understanding the content of the PFP course and applying it to their life experiences. What this factor reveals is that the design of the PFP course adequately accommodated the various needs of the different age groups. In other words, the BILD took adult learners' characteristics into consideration when they planned the PFP course delivery.

In the early stage of the study I was presented with some feedback that related to the physiological needs of the students that were impacting on their ability to perform in the learning environment. Many of the things they pointed out validated MacKeracher's (1996) and Slotnik et al.'s (1993) research. For example, the students identified difficulties they were having in understanding the audio component of the class, because of the poor sound quality. They also felt that the graphics lacked clarity. These difficulties created stress for the students because they had to strain in order to comprehend the lecture when it was delivered. After I made adjustments, such as providing the students at all locations with information about the use of the mute function on the polycom, the distraction created by background noises was reduced. The purchase of a lapel microphone for the instructor also assisted in improving the quality of the sound appreciably. The clarity of the graphics improved when the room setup and indirect lighting was adjusted. The participants also reported a fatigue factor that occurred part way through the class each evening. They attributed some of this fatigue to

the level of concentration that the delivery method required. They reported that remaining attentive to the audio and graphic components of the course delivery, without any visual cues from the instructor, was tiring. In addition, the students were unanimous in their opinion that some of the fatigue was related to the fact that the class was held in the evening at the end of a busy work day for some of them, a factor that no one could alter. To accommodate for fatigue, scheduled off-line activities were interjected into the class time. These off-line activities involved small group work at each site without any audio or graphic component and also provided a break. Following the small group discussions at each site, a summary of the discussion was shared on-line with the other sites and the instructor. Merriam and Caffarella (1991) remind adult educators of the importance of addressing issues that students raise and making every effort to make accommodations. In my study, addressing these concerns as quickly as possible reduced the students' stress somewhat, thus enhancing their ability to succeed in the learning environment.

The Adult as a Self-Directed Learner

Most discussions of the adult learner include references to whether or not the adult learner is self-directed. MacKeracher (1996) disputes the idea that this question can be answered easily because there is no clear definition of this characteristic in the literature. Merriam and Caffarella (1991), however, do not share this opinion. They point out that the adult learner often demonstrates self-directedness as a learner, and this attribute can fluctuate for the individual based on the particular life events that the adult learner is experiencing at various times in his or her life. In the study, the students reported that the assignment of readings prior to each class provided them with the opportunity to review

the concepts as well as sufficient time to research concepts that they did not fully understand. They reported that if a topic to be discussed in the next class had personal relevance, they appreciated having the time and opportunity to consider the personal implications of the topic. They also reported that they reviewed their own financial documents at home prior to the class discussion if the topic pertained to these documents.

Candy (1991) presents another perspective on self-directedness. He attributes this characteristic to the learning experience rather than attributing it solely to the individual. He explains that the design of the learning experience can foster self-managing learners. In the study the students reported that they valued the inclusion of the off-line discussions because these opportunities provided for some informal sharing of how the other students were applying the course content to their own life experiences and their own financial planning needs. These interactions met the students' need for the social interaction aspect of learning that Candy contends is an important aspect of self-directed learning.

Knowles (1980), in his description of the characteristic of self-directedness, emphasizes the fact that once adults have a clear understanding of their personal gain in the learning experience, that they will become fully engaged. A condition of this engagement is interest in directing their learning and becoming involved in the planning and evaluation of the learning process. In the study, the students were encouraged each week to share the highlights and the low points of the class. I reviewed these remarks on a weekly basis and then worked with the instructor to ensure that their concerns were addressed. This was done by incorporating appropriate modifications into subsequent classes in order to improve the learning experience. As a result, the students remained committed to providing substantial feedback throughout the study, because they knew

their suggestions and comments were being acted upon and that they were contributing to the success of the program.

In Week 4, the students at Campus B and C learned that the students at Campus A had requested and been assigned their own instructor to deliver the PFP course, essentially withdrawing them from the study. Interestingly, it was at this point that the students at Campus B and C began questioning the use of audiographic technology and focusing on its disadvantages. As MacKeracher (1996) points out, the withdrawal of the students or similar events often has an impact on the confidence of adult students. This happened at Campus B and C. The students' ability to remain self-directed in the course seemed to be challenged at this point. In this regard, MacKeracher cautions that adult learners are vulnerable to ongoing life events and changes that can cause them to question their own ability to handle the learning and the validity of the entire learning process. In this study, as a way to address the students' confidence issues and other concerns, such as their inability to communicate effectively and in a timely manner with the instructor, a class monitor was assigned at Campus B. The monitor was responsible to relay messages from the campus staff to the students at the beginning of class, as well as to alert the instructor if the explanation of a particular concept was not being understood by the class. The students at Campus B appreciated this intervention, and immediately reported that this accommodation was a valuable support for their learning. In other words, their ability to be self-directed was restored with this support.

Campus C did not express any interest in having a monitor appointed at their site. After the withdrawal of Campus A from the study, the students at this site regained their confidence after I, the support staff, and the instructor reassured them that their

communication problems with the instructor would be addressed and that the use of audiographic technology would not interfere with their learning. Of equal significance to the restoration of the student's confidence at both campuses was the onsite visits of the instructor. During these visits, each student at Campus B and C had the opportunity to interact with the instructor. For the rest of the course, the students provided consistent and thoughtful evaluative comments and showed evidence of being self-directed learners.

The Use of Technology in a Distributed Learning Environment

In this section I will discuss some of the issues relating to technology when it is used in adult education settings, how educational technology relates to the learning process, and the need for supports for distance students who rely on technology, for the delivery of course and for the instructors and support staff who are involved with these courses.

Issues Relating to Technology

Bates (1997) and Blackett (1998) endorse the use of technologies in education. In Bates' opinion, if an educational institution is not using technologies in the delivery of its courses, the facility will not remain viable as an educational institution. Both authors point out that technology provides many options for adults. They are able to access learning opportunities without time and place constraints while at the same time managing their other responsibilities. For example, early in the course one student in the PFP course, who worked in close proximity to Campus B but lived near and enrolled in the PFP course at Campus A, attended her class at Campus B one evening when she was delayed at work, otherwise she would have missed the class. As she explained,

“Technology allowed me to do this, and it is great. Besides, I got to put some faces to the voices that I heard in the class last week.” Other students at Campus B repeatedly mentioned that the use of audiographic technology in the classroom provided them with a learning opportunity that they would not have been able to access otherwise. As one student put it, “I tried driving to the main campus when I wanted to take a course last year. I couldn’t do it. I found I was falling asleep at the wheel on the way home.”

Whenever technologies are used in educational activities, Bates (1997) warns that careful planning is required in order to ensure that the technology complements learning expectations and learning activities. In my study the Powerpoint presentations on the SMART board provided an excellent medium for the delivery of content that required accurate recording such as rudimentary definitions and the basic principles of financial planning.

Prior to the delivery of the PFP course, I developed a checklist of activities that had to be completed before initiating the study at the campus level. This checklist included: matching the course curriculum to the appropriate educational technology, assessment of the required classroom specifications, and assessment of the required supports. Initially, the learning designers reviewed the curriculum with the instructor in order to gain a better understanding of the learning outcomes and how these could be achieved by completing specified learning activities. A number of the PFP course outcomes focused on the students’ ability to understand the basic terminology used in financial planning and the appropriate use of terminology in discussions. The use of audiographic technology was an ideal way to proceed, because this kind of technology is well suited to an introductory level course.

Johnson (1995) encourages adult educators to choose technologies that match the learning activity. When numerous manipulations of variables are required in order for the students to have a safe and repetitive practice of skills in order to learn a particular concept or skill, he points out that the educational technology should have this capability. In my study it was evident that the learning designers considered this requirement. The audio component of the AG technology provided for student interaction with the instructor. They could hear the instructor using financial planning terminology and they could have discussions with him about certain principles and the application of these principles to specific situations. As mentioned earlier, the course contained a large amount of codified knowledge that could be delivered quite adequately with the use of a Powerpoint presentation. Other learning outcomes of the PFP courses required the students to gain a basic understanding of how to apply the basic principles of financial planning to their own financial situation and portfolio. During the study this need was met during the off-line small group discussions at each campus location. Blackett (1998) explains that technology provides an important shift in control in the learning environment from the teacher to the student. This environment, which encourages individualized research options, permits adult students to tailor the learning experience to fit their needs.

During this study, when resources were required to enhance the classroom delivery these accommodations were made in a timely manner. This kind of responsiveness on the part of the administration, as Roy (1998) points out, provides the instructors with a positive indication that they were being supported in their efforts to work with a new delivery method. For example, the purchase of the lapel microphone added to the

personal comfort of the instructor during the study and improved the quality of the sound for the students. The instructor, otherwise, would have felt restricted in his delivery and would have been reluctant to have in-class discussions for fear of poor or incomprehensible voice transmissions. The findings from my study support the research of Roy (1998), and Donovan and Macklin (1999). In this new kind of learning environment, instructors, with sufficient supports, can adjust to the shift of control in the classroom if sufficient resources of time and money are allocated to assist them with these changes.

The instructor for the course reported that he was personally challenged by the use of technology in his course delivery; nevertheless, he enjoyed the opportunity to learn about its use. His personal confidence and familiarity with the course material motivated him to engage in the study and to pursue a new and different delivery method. One positive use of the AG technology from the perspective of the instructor was the opportunity for the students to go off-line for their small groups discussions. The instructor, like Schofield (1999), hypothesized that some of the students may have felt even freer to express themselves in their small group discussions, without the interference of the instructor. He also claimed that the off-line time provided the students with the opportunity to reflect on the content of the course in a relaxed atmosphere. In this way they probably became more fully engaged in the discussion and their own learning.

The study identified some of the negative outcomes that Bates (1997) warned could occur if the use of educational technology is not integrated well into the overall operation of the institution. For example, the scheduling constraints for the support staff at the main campus determined the level of technological support that was available for the study,

because the staff was not allowed to put themselves in an overtime position. Fortunately, no significant technological difficulties occurred outside of their scheduled work hours during the study. In addition, the technology support staff felt it would be unrealistic to mount a number of courses using AG delivery, based on the current support staff complement and schedules.

Conti and Kolody (1998) remind adult educators that when they decide to use educational technology for course enhancement three major elements need to be considered: the type of student, the course or program content, as well as the context or setting for the course. This type of assessment process provides the instructor with important data that can be used to make the modifications to a course or program in order to promote optimal results for the students. Interestingly, my assessment of the appropriateness of AGL technology to the type of student, the course content, and setting were adequate, yet the impact of each of these elements on the other, during the course delivery, gave rise to problems and challenges that I had not considered. For example, the students were not confident enough to stop the instructor's presentation to raise a question. The instructor also was not able to receive visual cues from the other sites, so he was unaware that a particular student or group did not comprehend a concept he was discussing. Based on this feedback from the students, and in order to address the students' confidence issues as previously discussed in this chapter, a class monitor was assigned at Campus B. This role was defined earlier. The monitor was effective in minimizing the problems caused by the setting (lack of visual cues) and facilitating improved student and faculty interaction. At Campus C, after the instructor visited their site, the students no longer hesitated to ask questions.

Educational Technologies and the Learning Process

Knibb (1999) and Gilbert (1998) support the use of educational technology, but emphasize the fact that worthwhile learning experiences should precipitate a personal transformation or change in the students' thought processes and their understanding of themselves. To ensure this outcome, the technologies being used should be familiar to the students and be suited to their learning styles. In this study, the students did not report any significant change in themselves or their way of thinking as a result of taking part in the PFP course. This fact may be attributable to the particular course that was offered, because it was at an introductory level. Nevertheless, the students' uneasiness with the technology in the classroom may have impacted their learning, because based on the students' feedback, many did not feel adequately prepared for the level of technology in the classroom. In their view, the way that the college explained the alternative delivery method included was not adequate, because it was not explicit enough. Seemingly, the students did not have a clear understanding of how extensively technology would be used in the delivery of the course, even though they had been informed that the course would be delivered using audiographic technology. Many had no previous educational experiences with technology in the classroom, and in many cases their only exposure to computers had been a personal computer in their work environment.

MacDonald (1998) is careful to explain that technology should be transparent in the learning environment to ensure that the technology does not become the focal point of the learning activity. A working knowledge of computers would prepare the students better for a technologically-enhanced classroom. The students suggested that future classes be advised that basic computer literacy would be an asset for individuals enrolling in a class

using an alternative delivery method. In this regard, Eastmond (1998) provides a excellent example of matching technology to learning styles in his discussion of the use of the Internet in adult courses. He explains that the variety of options that exist on the Internet for research and exploration is well suited to the breadth of learning interests that adults bring to the learning environment. This opportunity for self-directed search without time and place restrictions provides the adult with ready access to a broad array of opinions. The students can then reflect on these points of view before formulating their own opinions. This opportunity provides time for critical reflection which is so vital in adult education.

Supports for Distance Students

Brindley (1995) and Knibb (1999) identify the human and fiscal resources that should be allocated to the development and delivery of programs and courses at a distance. They stress that the availability of these services communicates to the distance student the value the institution places on creating a positive learning environment for all students. They challenge institutions that have embraced alternative delivery methods to examine the support mechanisms that are in place for the distance student, reminding adult educators that appropriate resources and supports are needed for all students, on-site as well as at a distance. For example, the students who took part in the study were interested in receiving a password that would provide them with electronic access to the catalogue of library holdings at Campus A, even though they received all of the required course readings for the PFP course in the course package that they purchased. One student reported that the password made her feel part of the college, even if she chose never to use it. What was important to her was the fact that she received the password.

Sherron and Boettcher (1997) stress that when an institution makes the shift to the delivery of learning opportunities in a distributed learning environment, time, energy, and resources need to be allocated to student support services. An understanding of the institution's strategic vision regarding service to learners on- and off-site will encourage alliances to develop between the support and academic staff that will be to the betterment of all students. In the study, it was evident that the support staff at the delivery sites took a real interest in meeting the needs of the students at a distance from the main campus. The staff had been involved prior to the start of the study during the professional development sessions, so they had a good understanding of the college's intentions to move into course delivery using a distributed format. For example, when difficulties arose with regards to the delivery and return of assignments, the support staff worked with the instructor to facilitate a solution, so that the students would no longer be disadvantaged by not having their assignments returned on time.

Based on the findings of the study, I am not able to come to any conclusions about the value that the distance students at Campus B placed on the availability of individualized services to support their learning. This fact aside, I can verify that the students as a group requested a variety of modifications to improve their learning environment. These modifications included changes to the physical environment in order to enhance the transmission of the audio and graphic components of the technology used, improvements in the reliability and efficiency of the courier service when sending and returning assignments, and the designation of a monitor at one site to enhance effective communication for the students at that particular site. During my study, I was not aware of any services rendered specifically to an individual student.

Supports for Instructors and Support Staff

In addition to the supports for learners, Roy (1998) believes that instructors and support staff need to be supported during their transition to alternative delivery methods. Her statements are based on the fact that, in a distance education milieu that is enhanced with educational technology, the role of the instructor and support staff will change. In my study, the instructor pointed out that he was more of a facilitator of the learning process than a teacher. He based this opinion on his many years of teaching. During this study he did not experience the same reliance of the students on the instructor as he had experienced in a traditional classroom. He was not uncomfortable with the shift in student attitude, but he was definitely aware of the difference. The instructor's reaction to this change differs from Schofield's (1999) who claims that these kinds of changes make "many teachers decidedly nervous" (p. 26). In fact, as stated earlier, the instructor welcomed the challenge including this shift in his role.

Based on this study, I can substantiate the importance of providing mentoring support for the instructor and the opportunity for professional development sessions for the support staff involved in direct support of courses using alternative delivery methods. In this study, these supports helped the instructor and support staff to feel prepared for the delivery experience and gave them the self-confidence to solve difficulties that arose during the delivery of the course. As study leader, I became very aware of how important it was for me to listen to the instructor's issues and to be aware of the magnitude of the changes that he had to incorporate into his practices. In fact, Reed and Beaudin (1993) caution that unless this kind of listening happens there will be problems. In my view,

support on my part provided encouragement for the instructor and support staff during their role change and ultimately contributed to the successful delivery of the course.

From the outset of the study, it was apparent that the success of this pilot study would be contingent upon the development of a problem solving approach that encouraged cooperation and compromise among the stakeholder groups involved in the planning and delivery of the PFP course. Consequently, when the students raised an issue it was not directed to a particular stakeholder group to solve on their own. Every effort was made to ensure that the solution remained focused on improving the learning environment for the students, rather than focusing solely on the role or task modification of a particular staffing group. For example, when an issue arose with regard to the students' assignments not being returned in a timely manner after being marked by the instructor, the problem was presented to myself, the instructor, and support staff. The students asked that the process be examined and solutions adopted so that they could receive their corrected assignments before they had to hand in the next assignment. As a solution, the support staff at the satellite campuses agreed with my and the instructor's suggestion to incorporate additional safeguards in the packaging, labelling, and return processes, a task which required additional paper work and time. They willingly took on this task and made it part of their regular routine.

Establishing a distributed learning environment requires the collaborative efforts of many individuals, if the outcome is to create a learning environment in which adult learners can meet their lifelong learning needs. The learning opportunities in this kind of environment need to be well planned and based on adult learning principles. Adult educators need to be cautious in the choice of the educational technology selected, in

order to ensure that there is a match between the technology and the course curriculum. As project leader it was important that I support the instructor so he could remain focused on facilitating learning in an environment in which the adult learner felt safe, respected, and also was able to establish meaningful relationships.

In the sections that follow, I offer a set of conclusions based on this study. Flowing from these conclusions is a set of recommendations directed to three groups.

Conclusions Based on the Study

The study was undertaken as a result of a convergence of a number of significant events at the college where I work. These included a commitment to a vision that supported the provision of accessible learning opportunities; the allocation of human and fiscal resources to the creation of a distributed learning environment across the college, including the satellite campuses; the reality of an economic downturn that impacted funding to the college; and the opportunity for external partnerships. Audiographic technology was used to deliver a 45-hour Personal Financial Planning (PFP) course to three distinct groups of students based initially in three different geographic locations. Early in the study, one group dropped out leaving two geographic locations. The instructor, for the most part, delivered the course from a studio at the main campus. Based on the analysis of this study, I have drawn the following conclusions:

1. Initiatives, such as that reported in this study, that involve fundamental changes to the core function and roles of the major stakeholders in an educational institution require a cross-functional team approach to encourage collaborative problem-solving. This kind of approach ensures that those who will be affected by the changes are

not only part of the process, but that they will have a better knowledge and understanding of the modifications that they will be asked to make.

2. Adult learners are well suited to a distributed learning environment as it encourages them to be self-directed learners. A distributed learning environment supports the adult learner in that it can provide flexibility with regard to the location of the learning activity, the timing of the experience, as well as the delivery of the course. All of these options are well suited to the adult learners' constraints related to personal and professional responsibilities.

3. The use of audiographic technology was well suited to the content of the PFP course and resulted in a successful learning opportunity for the students because the focus remained on the use of the technology as a vehicle for the learning rather than on the use of technology for itself.

4. Formative and summative evaluations provided valuable feedback during and at the conclusion of the study. The evaluations were a good way to keep in touch with the students and the various stakeholders. Thus, the various groups became actively involved in the study and became committed to the outcomes of the study. They contributed valuable input that improved the study as it was implemented and that later assisted the college with future planning.

5. Educational technologies enhance a learning environment in a variety of ways: these include extending access of a learning opportunity to a wider audience; providing students with greater control over the learning process; and bringing a vast array of opinions and experiences to the classroom through the use of the Internet. These enhancements are important because adult learners can engage in learning opportunities

in keeping with their own personal and professional schedules. Technology, especially the use of the Internet, is one way that adults can direct their learning and meet their particular learning needs.

6. Caffarella's (1994) program planning model provides the adult educator with a flexible framework for conducting a study and a practical guide for fostering cooperation between and among the various stakeholders.

Recommendations

Based on the discussion in this chapter and the preceding conclusions, several recommendations are offered for those interested in using a distributed learning environment to promote successful lifelong learning opportunities for adult learners. The recommendations will be divided into three categories: recommendations for the institutions, recommendations for staff, and recommendations for course development and delivery.

Recommendations for Institutions

The following recommendations are made for institutions committed to providing learning experiences in a distributed learning environment.

1. Designated space should be assigned when courses are being offered using alternative delivery methods. Creating a physical space to meet the specifications of the particular technology will not require staff time and energy once the correct modifications have been established. When digital connections are required for the educational technology that is being utilized, modifications need to be made to ensure that an analogue line is also available for phone connections.

2. Flexibility in staff assignments is required for new initiatives that require modifications to job descriptions, schedules, and assignments.

3. Sufficient resources need to be allocated on an ongoing basis so that the required physical resources to support the distributed learning environment are available and so that the professional development of all stakeholder groups is ongoing. To support this need for resources, educational institutions should foster new learning partnerships among governments, industry, and schools.

Recommendations for Staff

The following recommendations are made for instructors and support staff who are involved in providing learning experiences in a distributed learning environment.

1. Self-assessment tools should be used to define the level of competency of the instructors and support staff with respect to educational technologies. Based on these assessments, professional development opportunities should be designed and delivered. If possible, these individuals should be assigned a resource person to whom they can refer questions as they begin to use their newly acquired skills during the actual delivery of a course.

2. Whenever audiographic technology is used, the instructor and students should receive a schedule outlining when the course transmission will be delivered from the various sites. All groups of students at the various sites should be treated equally with regard to the number of on-site visits. If for some reason the instructor is not able to travel to the sites for a visit, the instructor should deliver the course from a neutral location. In this way, the instructor remains cognizant at all times of the students at a distance, rather than simply focusing on the students in the classroom in front of him/her.

3. Instructors should be supported in their efforts to incorporate educational technologies in their delivery style and should be assured that their role in the learning process is not being replaced. One way that this can be done is through professional development offered by the institution. In this way, they will acquire a better knowledge and understanding of how technology can be used effectively during the delivery of a course.

Recommendations for Course Development and Delivery

1. The information in the calendar needs to explain clearly that an alternative delivery method is being used. If audiographic technology is being used, prospective students should be encouraged to acquire some familiarity with computers prior to enrolling in the course.

2. The delivery method chosen needs to be an appropriate fit with the requirements of the course in terms of learning outcomes. This decision should not be determined by the information technology department, because they often have a vested interest in certain educational technologies. The decision should be made based on consultations between the instructor (content expert) and the learning designers who keep abreast of the features of current and emerging educational technologies so that they can assist in matching these features to the stated learning outcomes of a course.

3. Learning activities for the course should be designed in such a way that any examples used have some relevance to the students in the various locations in which they may be living. The assumption that all of the students are familiar with the context or community where the main campus is located is false and may alienate some of the students.

4. The installation of desktop conferencing would allow for visual cues between the instructor and students on an ongoing basis, therefore enhancing their interactions.

This modification is not expensive and the return on the investment, when considering the student's increased comfort in the learning environment, would justify the expense.

6. Consideration should be given to a monitor in each class that is delivered using audiographic technology, especially in the initial stages of introducing this alternative delivery system. The monitor should be provided with very clear guidelines in order to ensure that all stakeholders are clear about the role expectations.

7. The use of audiographic technology is a practical way to deliver a course in an economically feasible way for campuses at a distance from the main campus and its capabilities are well suited to the curriculum requirements of an introductory level course that involves a significant amount of codified information.

8. Both formative and summative evaluation should be used when a course is being delivered. In this way adjustments and changes to the delivery in the course can be made for the current group of students. The data gathered will be useful in making decisions about offering the course again or revising the course content and delivery

Today adult educators are faced with the challenge of meeting the diverse learning needs of a variety of learners. The convergence of newly developed technologies, the demands of a knowledge-based economy, and the lifestyle of many adults who are managing multiple responsibilities at one time provide an opportunity to promote a distributed learning environment for adults interested in pursuing lifelong learning opportunities. These lifelong learning opportunities not only contribute to the

development of a more highly skilled workforce, but just as importantly they can enrich an individual's life throughout that lifespan.

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