

STUDENT AND FACULTY READINESS FOR
DISTANCE EDUCATION

CENTRE FOR NEWFOUNDLAND STUDIES

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STUDENT AND FACULTY READINESS FOR DISTANCE EDUCATION

by

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Abstract

As distance education enters the mainstream of higher learning, educators must not only adapt to changing technology but must also recognize and promote it as a quality alternative to traditional classroom learning. Outcome measurement including academic achievement and student satisfaction supports the expanding role of distance education as a viable and rewarding choice for learners. This paper folio explores student readiness for distance education and the importance of faculty preparation and support, typical characteristics of today's distance learner, as well as distance education's unique fulfillment of adult learning theories. Because of the distinctive characteristics of the province as well as a superlative access to the newest technological advances, institutions delivering the Bachelor of Nursing Collaborative Program in Newfoundland and Labrador are well placed to offer a world-class distance education program. Distance education is envisioned as an agent for change, expansion, and diversity in the nursing program, particularly as it responds to the educational needs of adult learners.

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Introduction

The number of adults pursuing academic programs is growing in record numbers. According to Statistics Canada (1997), in 1993-94 adults aged 25 and over made up approximately 67% of all college students, 25% of all full-time university students, and the vast majority of the part-time student body. Since 1972, their presence at universities has increased at more than twice the rate for those under 25 (Statistics Canada, 1997). One powerful demographic influence is that of the "Baby Boom" population (those born between 1946 and 1964) who tend to show a strong desire for continued learning whether it be for improved work environments or to keep abreast of the rapidly changing world. A more recent demographic force involves children of the Baby Boomers who are past age 25 and choose to remain in school or to return to school like their parents.

Merriam & Caffarella (1991) accounted for this trend by highlighting the impact of our aging population, a larger number of adults than youth, and the increased educational level of today's adults (a strong predictor of participation in continuing education). MacNeil (1986) pointed to the effect of today's information age on lifelong learning which requires upgrading of knowledge and skills to keep pace with modern workplace demands. Shoemaker (1998) also emphasized that rapid technological changes are compelling adults to enhance their careers through formal education programs. As well, with several career changes predicted for working adults in today's society, returning to school "is

becoming a must and not an option" (p. 5). Regardless of the reasons for this growing trend, the education of adults has now assumed a significant role in society, and enrollment is expected to continue increasing (Cantelon, 1995).

Higher education institutions are responding to the demographic and technological changes that are resulting in growing numbers of adult learners. With a declining enrollment of younger students, aged 18 to 25, universities and colleges are placing an emphasis on designing new programs and services to meet the learning needs of the rapidly growing adult student population. The mission of many modern universities and colleges includes providing high quality, relevant courses that reach out to these non-traditional learners, empowering them to keep pace with change both in their careers and in their personal lives. As Shoemaker (1998) pointed out, by placing such emphasis on lifelong learning opportunities for the adult community, the institution benefits by extending its reputation and credibility, gaining an additional link to society and enhancing its service to the community.

In particular, the expansion of distance education courses and programs in today's universities and colleges has opened doors for many adults who have a desire or a need to pursue academic education but are unable to attend on-campus courses. By embracing the benefits of technology in developing distance programs in the past decade, administrators and educators in the field have made huge strides in improving the quality, quantity, status, and influence of distance education. Keegan (1996) pointed out that as a result, distance

programming now plays a new and crucial role as a complement to schools and universities to accommodate the increasing numbers of learners.

It has been predicted among advocates of distance learning that with the advanced technology available today to deliver education programs by distance, the traditional structure of universities will become unnecessary as students opt for the convenience of learning at home or in the workplace. Futurists like Dolence and Norris (1995) envisioned a transformation in higher education whereby students choose from an array of courses available at their location, work independently at their own pace, and complete the courses not by semester but when enough learning has occurred to apply that knowledge directly or to future learning. Honegger (1996) pointed out that full support for distance education is stalled by many administrators and educators in higher education because of an unwarranted fear that it will wipe out traditional campus education. But, in view of the rapid improvements in the field through today's technology, Honegger envisioned distance education in the future not as a replacement for traditional learning but equally balanced with it to meet the increasing demands for education among adults.

The predicted burgeoning in distance higher education in the new millennium has major implications for those involved in program design, delivery, and evaluation. In meeting the growing demand for new and improved course offerings, distance educators will be challenged to ensure program effectiveness and a successful, satisfying learner experience.

It is vital that, besides choosing among the many technologies and other appropriate instructional materials to deliver distance programs, elements of student learning, such as individual backgrounds, needs, characteristics, and interests, be integrated in the planning of these new educational delivery systems. There is little doubt that the ultimate goal of education, whether it be by traditional or non-traditional methods, is to facilitate and support students in their learning. As Holmberg (1995) stressed, it is "any educator's most important task" and, thus, the main focus in planning and delivering education (p. 32).

The application of the principles of learning at a distance are no different from their application by the traditional method. Distance students, like their on-campus counterparts, must be active learners. Instead of passively receiving information from the teacher, students must actively interpret content, connect it with already acquired knowledge, and fit it to existing cognitive structures (Schuemer, 1993). Distance educators and conventional educators alike are, therefore, concerned with the same psychological mechanisms through which the learner perceives, assimilates, stores, and retrieves information.

Methodology

Student learning in the distance setting is the theme chosen for this paper folio. Through a review of the literature, the author will explore specific topics in adult distance education: (a) student readiness, (b) faculty preparation, and (c) student outcomes. Although these topics will address three diverse aspects of

the distance learning experience, they are similar in that they are each relevant to endeavours that aim at promoting and enhancing student learning.

The first paper addresses student readiness and examines, through relevant research, the characteristics and conditions about the learner that are shown to prepare him or her for the distance learning experience. It seems reasonable to assume that adult learners (who usually are fulfilling multiple roles) experience difficulty in coping with the demands placed upon them academically. If so, then adult learners who choose to pursue the same courses at a physical distance from the teacher must experience additional difficulties. Adjusting to self-paced, independent learning, using technology to replace the classroom experience, and having minimal contact with the teacher requires a great deal of self-discipline and self-direction. This author presents an account of those learner characteristics identified in the literature as being necessary for a successful, satisfying, distance learning experience.

It is evident in the literature that although distance education uses methods and technologies that are unfamiliar to most conventional teachers, faculty are often encouraged to move their classroom courses to a distance format without prior training. As Cyrs (1997) stressed, "institutions that perpetuate this attitude and do not provide training for distance learning instructors will not survive in the growing student consumer market" (p. 15). Faculty preparation, the topic chosen for the second paper, focuses on the critical role of the teacher in the distance learning process. More specifically,

this paper addresses the special challenges confronted by those teaching at a distance and the importance of ongoing professional development programs for them in order to learn the new skills of distance methodologies. Based on the literature, the elements of professional development programs necessary to enhance teacher effectiveness are discussed.

The final paper provides a review of the literature on learner outcomes of distance education. Because the aim of teaching is undoubtedly to help students learn, educators are particularly interested in evaluating the process of student learning rather than other aspects of evaluation, such as the effectiveness of teaching methodologies. In view of the growing variety of distance delivery systems, distance educators today are especially interested in examining how well students have learned as a result of those unconventional learning experiences. The author presents research findings of student academic achievement in distance education and how these outcomes compare with the outcomes of conventional students. In addition, research is discussed that focuses on students' feelings, attitudes, and opinions of distance education. This type of data serves to enlighten educators about the fundamental question of the effectiveness of distance education in helping students to learn.

The purpose of this paper folio is to highlight the significant role of distance education as a viable educational option in the baccalaureate nursing program in Newfoundland and Labrador. An increasing number of students enrolling in this new program are adults who are fulfilling various other roles

while pursuing their education. For these students, the vast majority of whom are women, the economics of travel and accommodations, the responsibilities of home and children, and the need for continual income pose obstacles if they must attend on-site classes throughout their program of study.

Nurse educators here, as around the world, are challenged to provide an education program that is flexible, accessible, and adaptable to students' diverse educational needs. Distance education responds effectively because it reduces many of the barriers to adult learners' participation. By facilitating self-directed learning in off-campus settings, distance education allows these non-traditional students to more easily balance the combination of study with work and family life. Through the use of today's sophisticated telecommunications technologies to deliver distance instruction, nursing education in this province can be expanded without compromising the educational integrity of the courses.

Paper I

Student Readiness for Distance Learning

Distance education is playing an increasingly important role in academic programs throughout the world. Student learning at a distance is at the heart of this growing field. To provide optimal learning opportunities for every student who enrolls is the ultimate goal of program designers and educators alike. This first paper examines one aspect of student learning: that of the student conditions or characteristics that foretell readiness for distance education. Through a review of the literature, several cognitive, demographic, and psychological factors that contribute to readiness for success and satisfaction with the distance learning experience are examined.

The Advantages and Disadvantages of Distance Education

The rapid growth of adult distance education in the past decade spurs an examination of the attractive features of this virtually unfamiliar learning environment. It seems that the most obvious advantage of distance education for adults who tend to hold many roles is its **accessibility**. This feature makes it particularly attractive for adults whose family, professional, and social commitments make it impossible to attend on-site classes. Distance learners are afforded the opportunity to determine where they will receive instruction and

when they will learn. This independent learning structure allows individual students to learn for themselves and by themselves, when it is most convenient, but is seldom encountered in traditional instruction (Stewart, 1981).

Willis (1994) pointed to the **social equity** that is promoted by distance education. Students in remote areas can receive instruction which previously was available only in urban or more populated areas. By offering instructional alternatives, these off-campus programs open doors to adults such as mothers working at home, the physically challenged, and older adults who may otherwise be denied the opportunity to participate in higher education.

Its claimed **economic benefits** make the distance format a viable option to pursuing university education. Savings in the cost of housing and transportation, usually incurred for on-site classes, makes distance education attractive to many students (Willis, 1994). Institutions whose enrollment is declining for on-campus students can increase enrollment through distance learning programs while avoiding the expense of construction and maintenance costs of facilities to deliver such programs (Cantelon, 1995).

A fourth attractive feature of distance education is the **relative anonymity and privacy** it allows learners in their learning efforts. Ohler (1989) explained that the chance to operate outside of the educational mainstream is what attracts some learners and contributes to their success. For these students the idea of being in a traditional classroom face to face with the instructor and other students may be very disconcerting. Students who feel humiliated by pressure

to speak out in a classroom setting can, more comfortably, contribute to group discussion in an asynchronous environment often via technology. Students who prefer not to share their progress or failure in learning with peers are less pressured to do so in a distance structure than in a classroom.

Yet another advantage, recognized by Cantelon (1995) and Stewart (1981), is the **freedom from the inflexible lecture-type instruction** common in traditional classrooms, a format that can stifle learners' individual goals, learning needs, or interests. In the distance setting, the learner is not bound by the learning pattern of the group but, instead, may freely choose to omit content that is familiar and learn the necessary content at his/her own pace through reading or other methods.

Although distance education has great potential to serve as an equal partner with traditional education for the expanding adult market, it is not without disadvantages. The main difference between conventional and distance education concerns the interaction between the teacher and the learner (Keegan, 1996). Despite dramatic improvements over the past decade, interpersonal communication, a vital component of effective learning, may still be compromised for the distance learner. The learner may face such obstacles as no spoken language, absence of non-verbal communication, absence of a feedback process, delayed reinforcement, lack of communication with fellow students, as well as non-cognitive factors like lack of peer support, loneliness, anxiety, and uncertainty.

However, some recent writers of distance education greatly downplay the significance of these compromises. Writers like Cantelon (1995) praised distance education as an effective method for today's adult learners. The geographic distance once recognized as a drawback to learning has been eliminated, Cantelon stated, by "the cyberspace of electronic networking" (p. 9). As a result, physical distance today is no further away than one's computer screen (Cantelon, 1995). Still, gurus in distance education like Willis (1994) and Keegan (1996) stressed that developing strategies to improve student-teacher interaction in this non-conventional educational setting is an ongoing endeavour.

Profile of the Adult Distance Learner

Demographic characteristics of the adult distance learner do not differ significantly from those of the adult learner who participates in on-site courses. First introduced by Johnstone and Rivera in the 1960s and changed very little since that time, the profile of adult learners suggests that they: are more often women than men (approximately 55%); typically under 40 years of age; have completed some prior post-secondary education; enjoy an above-average income; are employed full time, most often in white collar occupations; are married and have children; and live in an urban area (Merriam & Caffarella, 1991).

In a study of distance education graduates from Alberta's Athabasca University between 1985 and 1990, women who were 25 to 45 years old made

up 65% of the distance learning students. Most participants lived in urban rather than rural areas (70%), and 73% of enrolled students had previous post-secondary education. As well, an overwhelming 95% of these distance students studied part time (Owen & Hotchkis, 1991).

A similar study conducted partly to identify the demographic characteristics of students enrolled in Ryerson Polytechnical Institute's Open College in Ontario revealed that these distance college students were predominantly female (77.9%). Approximately 46% of the students were between the ages of 31 and 46 years, 58% were married, and 51% had no dependent children. Approximately two-thirds of these Open College students had either graduated from university or had previous university experience. Sixty-seven percent of the students lived within 50 miles of the Open College, 83% were employed outside the home, and 62.2% were employed on a full-time basis (Robinson, 1992).

Holmberg (1995), who has written extensively on distance education, pointed out that despite commonalities like these, adult distance learners cannot be considered an homogenous group. Their diverse characteristics, needs, and interests make them individually unique despite the similarities identified through research.

Although the demographics of both groups have changed little over the past few decades, recent research findings suggest that the demographics of distance learners may be changing. After a decade in which distance student

enrollment quadrupled at a western Canadian University, a study of demographic characteristics was conducted to investigate the reasons why "historically atypical" students were enrolling in independent study (Wallace, 1996, p. 1). Findings revealed that this student population has shifted toward young students living closer to the university with full-time course loads comprising both distance and on-campus courses. The mean age of these students dropped steadily from 32 years of age in 1983-84 to 26 years of age in 1994-95, and the percentage of students under 26 years old more than doubled. As well, the percentage of students living close to the university (in the same city) and taking at least one on-campus course more than doubled in the ten-year period. The main reason given for pursuing distance learning instead of on-site courses was work commitments. Students were attracted to independent study because it allows control of the time, place, and pace of learning. These findings have important implications for the field of distance education in that the long-held assumption that distance learners are part-time adult students may be changing (Wallace, 1996).

Theories of Adult Education and Adult Distance Education

The teaching of adults is recognized going back to the time of Plato and Socrates. However, it was not until the 1920s and 1930s that educators began to realize that different methods were needed to teach adults than those used for teaching children.

In the 1950s, C. O. Houle (1961) identified three types of adult learners. They included (a) goal-oriented learners who use learning to reach a specific goal such as advancing a career, (b) activity-oriented learners whose motivation to participate is derived from the social contact or the activity itself, and (c) learning-oriented learners who pursue further education simply to grow through additional knowledge. Houle's research provides a framework of individual learner motives.

Two decades later, in 1973, Malcolm Knowles introduced the first framework for teaching adults in his well-known andragogy theory. Knowles' (1984) theory placed emphasis on the important role of the learners' past experiences in new learning, the self-directed nature of adult learners, and their intrinsic drive and readiness that stems from a desire to improve their current job or life situations. Knowles' approach, addressed in his book, The Adult Learner: A Neglected Species, continues to inspire and guide researchers and designers of adult learning activities.

Cross (1981) also focused on the notion that adults are independent and thus self-directing. She described adult learners in terms of their (a) personal characteristics, such as their physical, psychological, and sociocultural dimensions, and (b) situational characteristics, such as full or part-time learners, voluntary or compulsory learners. Cross, like Knowles, focused on identifying how adults' learning situations are sharply different from children's learning situations. Particularly, this is a result of physiologic body changes, the stages

of ego and personality development, and the phases of the life cycle in our society. She included in her theory that adult learners are typically part-time learners, and thus are usually volunteers, adding the role of learner to their many other important roles.

These theories, although criticized for failing to provide a comprehensive framework by which to teach adults, continue to assist educators to better understand this complex, rapidly growing student group and to plan appropriate learning activities. The adult learner who chooses to pursue learning at a distance differs very little from the adult who attends classes at the institution. As Moore (1992) commented, it is obvious that adult distance education be informed by the theories and research of learning in adulthood. Adult distance education differs, however, from conventional education in that the distance learning environment is physically separated from the teacher. The resulting differences in interpersonal communication between teacher and learners demand that learners be motivated, self-directed, and independent in their learning endeavours. The theories of distance education address these factors.

Wedemeyer (1981), in the 1950s, developed a theory for learners in distance education under the umbrella of autonomy. He proposed that distance programs should allow the learner to proceed through the program at a pace that meets his/her individual circumstances. He concluded that course selection should be individualized, and learners should be able to set appropriate, individual goals and strategies with freedom. The instructor, he felt, should be

responsible for encouraging learner autonomy with a view to developing a self-directed learner.

Moore, in the early 1970s, developed a theoretical basis for distance education that also stressed learner autonomy. He felt that in order to promote independent learning, distance programs should be learner autonomous. The choosing of learning activities, the resources to use, how to pace the learning, and the methods of evaluation should be left solely to the learner. A second dimension of Moore's theory concerned "apartness" or distance. Viewing "apartness" as a function of dialogue and structure, Moore stressed the importance of ongoing, effective two-way communication (dialogue) and a loose structure that allows the teacher the flexibility to respond to the learner's individual needs, goals, progress, and achievements (Moore, 1992).

Well-known Swedish writer and researcher of distance education, Borje Holmberg (1995), developed the theory of guided didactic conversation. Holmberg's theoretical position, like that of Moore, was based on a humanistic view that highly values student independence and autonomy. He placed an emphasis on individual learning in distance education through a form of communication between the student, the peer group, and the "supporting organization" known as guided didactic conversation. Following such principles as (a) well-developed self-instructional materials in an easily readable writing style, (b) invitation to students to exchange ideas and questions, (c) explicit advice and suggestions as to what to do and what to avoid, and (d) a personal

style in interacting with students, Holmberg predicted that distance educators will be effective in motivating students and facilitating independent learning at a distance.

The Concept of Readiness

The term "readiness" is not clearly defined. Merriam-Webster's 1993 collegiate dictionary did not include it, and adult education literature that directly addresses the concept of student readiness for learning is limited. However, considerable research has been conducted that addresses a child's readiness for learning, particularly readiness to begin primary school. Two main constructs of readiness are realized based on the child's developmental and academic progress: readiness for learning and readiness for school. Readiness for learning involves a child's attention span, motivation, and developmental status. Readiness for school, on the other hand, is linked to children's knowledge at any particular time, and it includes the child's specific cognitive and linguistic abilities.

Some authors, like Kagen & Neuman (1997) referred to a third construct, maturational readiness, in explaining this concept. These authors pointed out that the child's maturity level to the standard necessary to enter school is equally important to readiness.

These same constructs of readiness can be applied to learning in adulthood. Adults' developmental tasks, however, have less to do with biologic

and social maturation and more to do with their developing roles in life including social, professional, and personal roles. Knowles' (1984) theory of adult learning proposed that an adult's readiness to learn is increasingly oriented to these developmental tasks. He elaborated on this assumption by noting that the timing of learning experiences for adults must coincide with what they need to know at that time so that immediate application of knowledge can occur. Adults need to understand why they should learn something before they are willing or ready to learn it. Knowles' position that adults are ready to learn whatever will help them cope with their present circumstances or roles was reinforced by Cross (1981) when she referred to the "teachable moments presented by the developmental tasks of the life cycle" (p. 238).

Stage theorists focus on how adults' needs and interests change as they progress through the perceived stages of adult life. Developmental stage theorist, Bernice Neugarten (1976), referred to the life cycle as a phenomenon of time that is influenced by such factors as one's age, background, and social expectations. She claimed that as an adult takes on new roles, such as a return to the workforce, which requires further education, the adult will be ready to learn because it is the right time.

Academic readiness in adulthood, like in childhood, relates to the learner's cognitive ability to actively interpret new information and connect it to learning already acquired. The student's learning style and preferences, attitudes, study habits, and prior learning experiences are significant influences

in his or her readiness to learn academically. As adult learning theorist Knowles (1984) stressed, the life experiences an adult accumulates are a rich resource for learning. To enhance the learner's understanding of the content being taught and maintain his or her interest and motivation to learn, the adult's ideas, thoughts, and past experiences must be acknowledged in the learning process.

The adult learner's maturational readiness relates to the adult's ability to balance the demands of the learning activity with other role demands. Adults, according to Knowles' (1984) assumptions, see themselves as self-directed and responsible for their own decisions. However, the perceived need for and usefulness of the content at that moment in time will ultimately affect the extent to which the learner is committed to being successful in the learning quest.

The constructs of adult readiness for learning apply equally in the distance learning environment. Distance learners are, firstly, adult learners who bring various personal factors to the learning situation. These factors influence readiness for learning and ultimate success. Adult distance students' prior mastery of fundamental concepts and skills related to the course, their learning styles, strategies, and prior learning experiences as well as their individual life situations will affect readiness and, in turn, their ability to meet course demands.

However, in view of the level of commitment demanded of those who choose to learn in the home or workplace instead of in the classroom, it seems likely that demographic characteristics (like age and marital status) and personality characteristics (like intrinsic motivation, a positive attitude, and

learning independence) may also influence one's readiness for the non-traditional method.

Readiness for distance learning involves external factors as well. Having a quiet study space with the necessary physical resources impacts course success as does a strong support system of family and friends who encourage the learning activity while fulfilling other life roles. Lastly, the distance learner who learns through technology must possess the skills required for its use in order to be ready for learning.

Research on Student Factors and Conditions That Affect Readiness for Distance Education

Numerous research studies in the field of distance education have demonstrated no significant difference in the academic achievement between distance learners and their traditional counterparts (Kabat & Friedel, 1990), especially within nursing education (Keck, 1992; Shoemaker & Fairbanks, 1997).

The literature is replete, too, with empirical investigations aimed at demonstrating the effectiveness of various information and communication technologies on student performance (see Wetzel, Radtke & Stern, 1994, for a discussion of technology effectiveness). By comparison, fewer research studies exist that are devoted to such psychological factors as readiness of these learners for the distance education experience.

Demographic factors. Some researchers, though, have focused on profiling the effective distance learner, concentrating on identifying the demographic characteristics associated with readiness for distance education. Oxford, Park-Oh, Ito & Sumrall (1993) reported that female students were significantly more likely than male students to succeed in learning a new language by distance methods because they demonstrated more skill than males in using appropriate learning strategies.

Bink, Biner, Huffman, Greer, & Dean (1995) found that both student income and socio-economic status had little to no impact on student achievement. Exploring the potential impact of prior academic experience on distance student performance as well, Bink et al. (1995) reported no relationship between students' success and the number of previous distance courses they had completed.

Prior research by Dille & Mezack (1991) was also unable to demonstrate that prior distance course experience was predictive of student performance. These researchers also examined student age in relation to their performance in televised distance courses. They found that the average age of successful students in their study was 28 as opposed to an average age of 25 for non-successful students. These authors contended that because age often brings greater maturity and self-discipline, older students can be expected to perform better. Marital status, as well, was shown to be a predictor of success as married students over 25 years old performed at the highest levels.

Because older students are more likely to have full-time careers, a family, and the responsibility of paying for their own education, Dille & Mezack (1991) argued that it would be viewed by these mature learners as wasting their valuable time, money, and effort if they were unsuccessful or dropped out of the course. These research findings supported the previous findings of Delbeq & Scates (1989) who demonstrated that maturity, high motivation levels, and self-discipline were necessary characteristics for successful adult distance learning.

Student attitudes. Biner, Dean, & Mellinger (1994) investigated the impact of student attitudes on distance students' success. They found that the maintenance of positive student attitudes resulting from their satisfaction with the program can result in a number of benefits for the student. These include higher levels of motivation and greater commitment and loyalty to the program.

Biner, Summers, Dean, Bink, Anderson, & Gelder (1996) extended prior research on the role of student demographics and prior distance experience by linking it to the potential role of these variables in predicting student attitudes (i.e. satisfaction with the instruction and instructor, technology, logistics and management). Results suggested that male students were more satisfied than female students with the logistics and management aspects of the course. The researchers contended that because these aspects of the courses can be time-consuming activities for the student, females are more likely to be critical of the time consumption posed by such activities due to the multiple roles they tend to assume. Student age, personal income, and socio-economic status were found

to be unrelated to satisfaction and success while prior distance experience had a positive effect on satisfaction. Collectively, these findings serve to create an awareness for educators of distance education of the importance of maintaining positive attitudes among the students enrolled in these programs.

Locus of Control. The relationship between students' locus of control and their academic achievement was investigated by Dille & Mezack (1991). The more successful students in their study were those with greater internal locus of control. Locus of control is characterized by the belief that personal achievement is due to ability and effort as opposed to luck or situational factors.

Parker (1994) examined locus of control as a predictor of dropouts from distance education, and she determined that students with an external locus of control are more likely to drop out of distance classes than students with an internal locus of control. The author noted that, by identifying potential students who exhibit an external locus of control, time is available to advise them to register for time management in-services and to determine clear goals prior to registering.

Personality characteristics. Biner et al. (1995) investigated personality characteristics to determine if distance students had a unique personality profile when compared to on-site students and whether specific participant traits could be predictive of success. A widely used personality assessment questionnaire was administered to two groups of college-level students enrolled in the same course. One group learned through televised classes at remote sites and the

other through face-to-face instruction in the broadcast classroom. Student performance was measured by final course grades. Findings indicated that the distance learner's personality profile differed markedly from the profile of the traditional student. Distance students tended to be more abstract thinkers, emotionally stable, trusting, compulsive, and non-conforming than the traditional students. As well, several personal characteristics were predictive of successful performance among the distance students. Data revealed that self-sufficient, introverted individuals performed better than those who were group oriented, extroverted. Higher grades were also reported for distance students who demonstrated greater expedience than traditional students. Given that distance students often balance multiple competing priorities, having greater expedience works to their benefit as they juggle work, school, and family responsibilities.

In summary, the study by Biner et al. (1995) of distance learner personality and achievement found that students most likely to succeed in distance learning are those individuals who are resourceful and prefer to make their own decisions. They are not concerned with following social rules, and they often disregard them altogether. Finally, these students are introverted, self-indulgent (probably considering the variety of activities they have chosen to engage in on a daily basis), and tend to meet responsibilities in an expedient, efficient manner (Biner, et al. 1995).

A similar study by Powell, Conway & Ross (1990) at Athabasca University identified several important predisposing student characteristics that profiled

successful and unsuccessful distance students. A combination of demographic, academic, and personality characteristics identified by these authors as indicative of success included (a) persistence to complete difficult tasks, (b) being married and female, (c) having a need to succeed academically, (d) choosing a designated place and time for study and having good organizational ability in terms of study activities, (e) a high rating of the value of prior learning to prepare for university education, (f) independence in completing courses, and (g) a high literacy rate. The results of this study closely resembled those of Biner et al. (1995). The determinants of success in distance courses are not surprising, considering the high level of independence and self-direction that distance study demands. Bernt & Bugbee (1993) examined factors that affect academic achievement among adult distance learners. These authors found that students with a high grade point average were more likely to report behaviours that reflected self-directed learning.

Cranton and Knoop (1990) in their study of personality types found that the introverted, intuitive personality type is best suited for self-directed learning. Learners with this personality type like to study alone, need a quiet environment to concentrate, enjoy the opportunity to think independently, and excel at creating their own direction. The authors pointed out that an individual with this personality characteristic not only needs time alone but also does not require teacher direction to learn. Undoubtedly, because distance education requires the individual to proceed with learning having minimal input from teachers or

facilitators, it is logical to assume that individuals with an introverted, intuitive personality type are suitable for distance study. These studies relating to personality characteristics offer both educators and students of distance education valuable insight into the impact of personality traits on readiness and success in distance learning.

Willis (1994), a well known researcher of distance education, pointed out that "adults who are most likely to complete courses using distance technology have a cluster of important characteristics, such as tolerance for ambiguity, a need for autonomy, and an ability to be flexible" (p. 54). He found that those who are most likely to drop out of distance courses tend to prefer a great deal of structure, face-to-face lectures, and the opportunity to interact with the teacher.

Willis (1994) claimed that considerable research has focused on the personality characteristics of field dependence and field independence in explaining suitability for distance education. Field independent individuals enjoy autonomy and physical, emotional distancing from others. They tend to have an abstract orientation to learning and are likely to work well with little or no guidance. These learners tend to be well suited to learning environments which demand self-direction, independence, and minimal interaction with the teacher and other students.

Field dependent individuals, on the other hand, are socially oriented and depend on visual cues for learning. They are influenced by authoritative opinion; they need detailed explanations and a good deal of reinforcement.

These individuals are, thus, likely to experience difficulty in independent study activities (Willis, 1994).

Luk (1998) found in two studies of Bachelor of Nursing students in distance education programs that field independent nurses performed significantly better academically than field dependent nurses. The author explains that this difference in academic achievement results from the nature of distance education which is teacher-independent and self-directed thus creating learning difficulties for the field-dependent student. Having fewer abstract and analytical thought processes than the field independent learners, the field dependent learner is prevented from following the guidelines of instructional packages. So, too, the lack of immediate feedback and contact with teachers and groups impedes learning for the field dependent individual.

Study habits. The approach to study, too, can be an important factor in determining student readiness for distance education. Due to the diverse learning environment in which distance students enter, the study skills acquired in elementary and high school may no longer be appropriate. Distance students need additional skills in studying independently, better time management in terms of study time and self-discipline.

The skills and approaches to study of distance students, particularly the motivations and study strategies needed for success, were studied by Ekins (1992). Her results indicated that deep motivation (intrinsic motivation) combined with a deep study strategy (relating new information to previously

learned material and deriving meaning from it) seem to be keys to success in distance learning. Students in her study who had persisted in the system longer, on average, rated themselves more highly on study skills than novice students. For the more experienced group, the most marked areas of study improvements were in organizing their time, acquiring necessary background skills, and in making notes of content studied. Ekins concluded that the distance learning students tend to have deep motivation, as do most adult learners, but in order to attain success, they must develop appropriate study skills.

Wong (1992) compared the learning characteristics of adult, part-time, external students to adult, full-time, internal students. He found also that external students used a deep approach to study (i.e. they interrelate ideas and focus attention on the underlying meaning) and they had high intrinsic motivation. The internal students, on the other hand, used a surface approach to study and tend to be extrinsically motivated. This author concluded that the significant differences in students' approaches to study could be due to the differing learning environments or the age distribution to the two groups. The older distance students, Wong found, tend to be less motivated by pragmatic concerns and more liable to adopt a deep-level approach to their work than younger students.

Carr, Fullerton, Severino, and McHugh (1996) compared specific characteristics of students who were successful in a distance graduate nurse midwifery program with those who, for various reasons, did not complete the

program. The greatest differences identified from these data were related to the academic characteristics of the two groups. Members of the dropout group were less likely to allocate sufficient time for study, less likely to persist in studying, and less likely to use the resources of a study partner or the modes of communication available, although they had claimed to be familiar with using computers.

These research findings emphasize to educators the importance of monitoring students' study habits when teaching distance courses and, when necessary, assisting students to develop an effective approach to study.

Enrollment motivation. Due to the unfamiliar nature of the learning environment, it seems reasonable to assume that a high level of motivation is required for success in distance programs. As adult learners who voluntarily enroll, distance students are undoubtedly motivated to learn. However, their reasons for enrolling in distance education need to be closely examined to determine their level of motivation for this unconventional method of education.

Some researchers focused on whether or not distance students were intrinsically motivated as opposed to extrinsically motivated and the factors that were involved. Robinson (1992) examined distance students' motivation to learn for its applicability to one of Knowles' assumptions of the adult learner. Results from this study supported Knowles' belief in that students are motivated by intrinsic rewards, such as increased self-esteem, recognition, or increased self-confidence.

Gordon (1992) compared two groups of adult education graduates from off-campus credit programs to determine their motivations for participation. Both groups indicated the factor 'professional advancement' as the greatest motivator for enrolling followed by 'cognitive interest.' Another study of enrollment motivation by Miller (1995) among graduates of an off-campus agriculture degree program, 89% of which were male, indicated that the pursuit of a degree was the most important motivating factor for enrolling followed by the desire to acquire current knowledge in their chosen field.

MacBrayne (1995) examined the enrollment motivations of a large group of rural community college students, approximately three-quarters of whom were women. When asked the most important reason for enrolling in distance courses, one-half of the students cited job-related reasons, such as the desire to earn a degree, while the other half cited self-improvement, such as the desire to obtain new knowledge that would lead to a more satisfying future.

Enrollment motivations of adult distance learners as indicated are multiple and diverse. Having a knowledge of the forces that drive the learner to pursue distance education can assist the teacher in predicting the learner's level of determination to succeed.

Potential constraints. An examination of potential constraints that distance students confront is also significant to this discussion of readiness. Identifying, through the literature, common barriers to distance education can shed additional light on those elements that students need to prepare for a

satisfying and successful distance learning experience. Hezel & Dirr (1991) surveyed 100 higher education distance learners about the importance of various potential barriers for them and whether any of those barriers contributed to their taking distance courses. Students indicated that time rather than distance is the major constraint facing adult distance students. Managing their time, in view of the common competing demands from jobs, families, and other responsibilities, was the greatest challenge.

Brindley (1987) studied the incidents that hindered or facilitated persistence in distance courses at Athabasca University in western Canada. Among other student experiences, such as background, academic, and demographic characteristics, she identified personal variables like hours of employment and family responsibilities that limit time for course work. Her study highlights limited time for course work because of competing family and work demands as the major barrier to success in distance education. This is not surprising considering that the majority of these learners are mature adults between the ages of 25 and 45, predominantly female, who enroll in part-time courses while working full time as well as managing a home and family.

Summary

A review of the literature has revealed several important elements that contribute to a student's readiness for the distance education experience. Among the studies reviewed on demographic characteristics, it appears that

age, gender, and marital status are determinants of success in distance learning. Authors of these studies maintain that qualities such as maturity, high motivation, and self-discipline typically describe the mature learner who is fulfilling multiple roles. It seems reasonable to assume that students who possess these desirable characteristics are ready for the independence that the distance learning experience demands.

Specific aspects of personality characteristics, too, were shown to predict success in distance education. Individual attributes like an internal locus of control, self-sufficiency, resourcefulness, expediency, self-indulgence, the ability to be flexible as well as an introverted personality type seem to determine readiness for this non-traditional learning experience. Positive attitudes about learning by distance that results from a high level of satisfaction with the course also seems to be an important criterion for distance learner success.

The study habits of students were highlighted in the literature as a valuable measure of success in distance education. Particularly significant was the need for students to develop a deep approach to study whereby they attempt to derive meaning from course content, to make notes, and to organize their time so that sufficient time is allotted for course work.

Another guideline of student readiness for distance learning was the enrollment motivations of these learners. Important enrollment motivators focused specifically on distance learning to include a desire for independence, a better fit with individual learning style or preference, and a chance to study

outside of the traditional setting. Professional advancement and cognitive interest in learning were cited as important reasons for enrolling as well. For these students it seems the type of learning environment chosen was of lesser importance than their desire to achieve academic success. The student motivations identified are applicable to adult learning theory. Considering Knowles' (1984) five principles of adult learning, Cross's (1981) learner characteristics, and Houle's (1961) framework of adult learner motives, the tenets of these theories seem to have been widely supported in the student's enrollment goals.

Lastly, potential barriers that challenge distance learners are known to impede readiness. The author probed the literature for evidence that factors like anxiety and lack of confidence about learning at a distance or lack of required skills, such as computer skills, hamper students' ability to learn by this method, but little evidence was found. Instead, criteria relating to poor time management for independent learning and ineffective study skills were identified.

The findings of this comprehensive review of relevant literature on student readiness for distance education have important implications for program developers, educators, and distance students alike. Findings provide valuable insights into the relationship between success and satisfaction with distance learning and the prerequisites that are likely to generate that success. In view of the ongoing pressure placed on distance programs to provide evidence of its effectiveness for student learning, the predictors of academic achievement and

satisfaction outlined here can serve as important considerations in the design of those programs.

In the first paper of this folio, specific predisposing learner characteristics and conditions that are apt to prepare students for the distance learning experience were discussed. However, in addition to considering student readiness, the significance of faculty readiness to assume the new challenges of the distance teaching role cannot be underestimated. Administrators and educators alike must recognize that distance teaching is unlike traditional classroom teaching, and they must be willing to invest the time, effort, and money in preparation for the new role.

Paper II

Faculty Preparation for Distance Teaching

Distance courses must be designed and delivered in a way that gives careful consideration to those learner variables and teaching approaches that are likely to achieve the most positive outcomes. Besides such teaching competencies as subject mastery and delivery skills demanded of all teachers, the distance instructor must be equipped with specialized teaching strategies and tools that maximize the involvement of each learner despite the distance between them and their teachers.

Distance teachers must acquire a sound knowledge of the visual and interactive capabilities of the growing variety of instructional technologies so as to plan instruction effectively. Adequate preparation in instructional design for distance delivery, effortless operation of the equipment, and active facilitation of meaningful learning at a distance serve to enhance teacher performance for the benefit of learners.

However, the literature abounds with evidence that teachers, especially those in conventional educational institutions, are not adequately prepared to convert from traditional classroom teaching practices to those required in distance education. Despite the explosion of technology to deliver distance instruction to the growing student market, several studies cited resistance by

faculty in adapting these new educational methods (Barker & Dickson, 1994; Gunawardena, 1990; Spotts & Bowman, 1995). Distance teachers acknowledge that they lack the knowledge and experience required to use these technologies. They claim they are unfamiliar with how to organize and deliver instruction that is suitable in content and format for independent study. Many distance teachers feel uncomfortable, often skeptical, about these non-traditional teaching methods. As a result, they continue to rely more on traditional methods of delivery such as print-based materials than on innovative technologies (Spotts & Bowman, 1995).

Willis (1994) attested that in order for faculty to successfully make the transition from the conventional classroom to the distance teaching environment, it is imperative that specialized training be provided. To stay current and competent in utilizing these technologies, faculty and other professionals involved in designing and delivering distance education programs must receive continued institutional support through comprehensive faculty development programs that address their learning needs. Only with adequate attention to faculty preparation can instructional quality and long-term success in distance education be ensured.

Through a review of relevant literature, this paper addresses the critical role of faculty in distance education. The author discusses the special challenges that confront those who teach at a distance and, subsequently, the competencies required to teach in this demanding educational environment.

Faculty development programs are examined, including their benefits in increasing teacher effectiveness and instilling positive teacher attitudes about this mode of delivering instruction. A description of the essential elements of successful faculty development programs is provided. The author concludes with a brief discussion of additional faculty development issues that require careful consideration by the educational institution, issues such as providing adequate time for course preparation, considering course workload, and allowing opportunities for promotion.

The Need for Faculty Development Programs

The distance learning environment is significantly different from that of a traditional classroom, and, therefore, special challenges confront those teaching at a distance. In an attempt to overcome the barrier of physical distance from students, the distance teacher must carefully select and incorporate teaching strategies, technologies, and materials that promote effective student learning. This requires special skills and knowledge utilized less frequently by traditional classroom teachers.

Moore & Thompson (1990) identified three distinct features of distance education that demand specialized teacher education. These authors contended that distance education uses technologies that are unfamiliar as the primary media for communications to most teachers. They claimed that distance education requires teachers to specialize in the various roles of teaching,

especially those of counsellor, content expert, facilitator of ongoing interaction, course designer, technical expert, and learner. Lastly, they pointed out that distance education requires planning, development, production, and distribution on a larger scale than is familiar to most teachers. Each of these three features requires major interventions by policy makers.

Mood (1995) echoed the opinions of Moore & Thompson (1990) by emphasizing that the distance teacher must assume a number of non-traditional teaching roles. She contended that, besides the knowledge and skills required of all teachers, distance teachers need expertise in instructional design, use of technology (including technical support), and skills in broadcasting or television presentation if such media are used. She also noted the distance teacher's roles of student support such as counsellor and librarian usually assumed by on-site professionals in conventional education programs.

Willis (1994) contrasted the challenges faced by the distance teacher with those faced by the traditional classroom teacher. He stated that in order for traditional teachers to shift to the role of distance teacher (which commonly occurs), the faculty member must

- (a) view the course in a new way. Even for experienced classroom teachers, distance delivery can pose difficulties because it requires significant rethinking and adaptation.
- (b) convert from the role of content provider to content facilitator. Not only expertise in the subject but the ability to incorporate individual learning styles and backgrounds of students into the teaching process is required.

- (c) acquire comfort and proficiency in using technology as the primary teacher-student link. In order to acquire technical competence and confidence, an understanding of delivery system strengths and weaknesses and how to use them effectively is required.
- (d) learn to teach effectively without the visual control provided by direct eye contact. Visual cues that allow the teacher to identify students' reactions to the teaching are few or lacking by the distance mode. In fact, unless a real-time visual medium such as television is used, the distance teacher cannot determine if students are listening, sleeping, or even present during the class.
- (e) develop an understanding and appreciation for the distance student's lifestyle. Because a large number of distance students live in rural, often remote areas, they tend to be culturally and socially diverse. Distance teachers need to be familiar with their varied backgrounds to ensure effectiveness.

Beaudoin (1990) emphasized the need for faculty accustomed to conventional teaching modes to acquire many new skills to assume a teaching role in distance education. Faculty must especially realize the potential of technology to facilitate learning. He provided an example—a seminar course originally designed for a small, intimate group of classroom students who are known to the instructor cannot be offered to an off-campus class of several hundred students, who may have never met the instructor or each other, without major reconfigurations that require the knowledge and expertise of a specially trained distance educator.

The change in role from a classroom to a distance teacher was described by Beaudoin (1990) in this way. "Faculty must recognize the role of instructional technology as a learning resource. The teacher is increasingly an intermediary between students and available resources" (p. 22). Dr. Gunawardena, a

distance faculty member at the University of New Mexico, described her change in role from that of a teacher standing in front of the classroom at the centre of the process to one of a facilitator whose role is to support and guide the learning process (Gunawardena, 1990). Purdy and Wright (1992) described this new role as guiding learner initiated inquiry and exploration rather than knowledge transmission.

Considering the radical changes required of distance teachers in order to make the transition from the classroom setting, it is not surprising for authors of distance education literature to assert that traditional teaching techniques are ineffective in distance settings (Dillon, Gunawardena, & Parker, 1993; Garrison & Shale, 1990; Milheim, 1991; Wolcott, 1993). As Milheim (1991) contended, delivering course content in a lecture-based format (commonly used in classroom instruction) is not effective when the communication with students is mediated through technology.

The need for specialized development programs for faculty and others involved in teaching at a distance is strongly attested (Thach & Murphy, 1995; Willis, 1994). Such training programs are necessary now more than ever before as communication and information technologies have become more sophisticated and available resulting in the rapid transformation of faculty roles. There is little doubt that bringing to the distance learning setting a class that was originally developed for the traditional classroom, without making optimal use of

available technologies to meet the unique learning needs of distance learners, would be unfair to both the students and the teacher.

Learning Needs of Distance Education Professionals

Before planning education programs for professionals of distance education, it is necessary to identify the specific skills and strategies they will need to function effectively in this complex educational environment. Several studies have sought faculty's identification of the necessary skills. Kochery (1997), in a survey of distance faculty at the University of Minnesota, identified two general needs considered by faculty to be important for training. They included (a) maximizing interaction and feedback with students and (b) developing instruction via available technology.

For her doctoral dissertation, Furiga (1995) investigated among an experienced group of distance faculty, administrators, and educational technologists, their perceptions of the most important knowledge and skill requirements for distance teachers using video or audio modes of delivery. Consistent with later findings of Kochery (1997), most important to these professionals, after subject matter expertise, were strategies for fostering student interaction and for using the technology to promote educational theory and practise. She concluded that, because a specific knowledge and skill is required by distance faculty, appropriate faculty development programs should

be provided by administration, and teachers should complete them prior to assuming a distance teaching role.

It is noteworthy that the findings of both these studies reflect a major concern of distance teachers: to provide an optimally stimulating and dynamic learning environment for students that attempts to overcome the barrier created by the physical distance between them. Although students must play an active role in the distance learning experience, successful interactions are dependent to a great extent on the distance teacher's effective delivery of instruction. As in the traditional classroom, the distance teacher is the central figure who transmits knowledge and stimulates learners to be active participants. Regardless of the setting, all teachers must be cognizant of the fact that effective learning is "dependent on active negotiations and explorations of meanings. It is not a passive individual experience based on mere exposition, reception, and retention" (Kochery, 1997, p. 2).

Two other recent studies have classified the learning needs of faculty as roles and competencies required of distance professionals in academic institutions. Cyrs (1997) and Thach & Murphy (1995) identified similar areas of competence (as summarized by Cyrs, 1997):

- (a) course planning and organization
- (b) verbal and non-verbal presentation skills
- (c) collaborative team work
- (d) expertise in questioning and providing feedback to students

- (e) subject matter expertise
- (f) student involvement and coordination of activities at all sites
- (g) basic learning theory
- (h) knowledge of the distance learning field
- (i) design of study guides correlated with the visual field
- (j) graphic design and visual thinking

These ten competencies describe the dual importance of both communication and technical skills in distance education. These studies, like those of Kochery (1997) and Furiga (1995), emphasized the importance of faculty knowledge of the capabilities of the various delivery systems and how their strengths and weaknesses affect planning and delivery. Equally important to distance professionals is knowing how to use the technologies effectively and having general knowledge of instructional development.

In addition, these researchers noted that distance education teachers must possess effective communication skills. Distance teaching demands competence in ensuring ongoing effective interactions with students, such as providing appropriate cues to students (often in the absence of visual cues), stimulating active participation, ensuring students' understanding of content, focusing their attention, and managing discussion between sites.

Landstrom (1995), in a study of distance faculty attitudes and opinions at the University of Windsor, found that the major concern of most instructors regarding their experience in the distance courses is the lack of interaction with

students. As a result of these and other findings, two initiatives were undertaken at that university: workshops for new and former instructors to enhance the sharing of experiences and techniques for effective interaction with distance students, and more information about distance education including relevant research disseminated among faculty.

Collaborative teamwork is another important skill of distance teachers. Although a major adjustment may be necessary for traditional teachers accustomed to working independently in course design and delivery, teamwork skills for the distance teacher are considered critical for success. The instructor must learn to work closely with site facilitators, technical support staff, and administrators. Collins & Murphy (1987) found that a positive working relationship with the technical support staff resulted in effective delivery of courses. Distance faculty, in turn, must be responsible for promoting teamwork among students, especially in isolated areas, to improve student learning (Jones & Timpson, 1991).

Cyrs (1997) and Thach & Murphy (1995) also included knowledge of learning theory among the ten most frequently cited competencies required of distance faculty. Unlike on-site students, distance students are more likely to be adults over the age of 25. Furthermore, they are expected to carry out a great deal of learning on their own, often at a geographic distance from the teaching institution. Distance faculty, who are more accustomed to traditional teaching whereby students tend to be younger and faculty have greater instructional

control, must make fundamental instructional role changes. The distance teacher must possess the skills to organize appropriate instructional resources suitable for independent adult learners.

Recognizing the diverse learning styles of these mature learners and their need for meaningful learning applications, the distance educator must then choose the format in which to deliver the information. So, too, the distance teacher must be skilled in providing the critical elements of dialogue and direction to learners at varying stages of cognitive and psychological readiness for self-directed learning activities. This required change in faculty roles for distance teaching supports Knowles' (1984) theory of adults as self-directed learners and proposes that faculty training programs for distance teaching should include adult learning and teaching principles.

Knott (1992) felt that distance teachers need knowledge and skill in how to conduct a learner needs assessment based on learner characteristics. She stressed the importance of identifying the learning needs of individual participants in distance education in view of the growing diversity of needs and value systems among today's students.

Wolcott (1993), in a qualitative study that examined how distance teachers plan instruction, identified that among distance teachers there were infrequent references to student characteristics or learning needs. She attributed this weakness to teachers' lack of understanding of the process. She also identified that subjects did not have effective planning skills, such as

curriculum and day-to-day lesson planning, and lacked an understanding of adult learners. Like Knott (1992), Wolcott highlighted the critical importance of distance teachers being adequately prepared in incorporating the needs and motivations of adult distance learners in instructional planning.

The learning needs of distance teachers tend to be as diverse as the learning needs of their students. It is stressed in the literature that additional training and instructional support is essential if distance teachers are to effectively plan and deliver distance courses. Professional development programs must focus on the necessary skills and strategies identified as well as on the unique learning needs of individual faculty.

Faculty Development Programs and Their Benefits

Many of the same teaching skills and strategies acquired for classroom teaching are used when teaching at a distance. No doubt, the course content and general principles of facilitating adult learning are fundamentally the same regardless of the delivery method. Distance teachers have, as well, used some technology in their prior classroom teaching role. The focus of professional development programs, then, is not solely on imparting new skills and knowledge but also on helping professionals to apply the knowledge and skills they already have (Lowenthal, 1981).

Rutherford & Grana (1995) referred to the new technologies used in distance education as somewhat similar yet faster, better, and more varied in

application than traditional technologies. These authors, like Lowenthal (1981) explained that specialized training programs assist distance teachers to extend what they have done before and to acquire the unfamiliar elements of distance education.

Lindquist (1981) held a proactive view of professional development. He expressed its greatest challenge as that of educating and socializing faculty and administration for tomorrow's post-secondary education. Faculty development programs must prepare teachers for the increased volumes of adults enrolling as well as the number and types of delivery systems that will be used. Recent literature by Beaudoin (1990) and Wilson (1996) on distance teacher education has reiterated Lindquist's futuristic view. A long-term goal of distance teacher education is to meet the educational needs of society in the twenty-first century.

Willis (1994) traced the evolution of faculty development programs in distance education. Past methods focused on the symptoms of the problem (dissatisfied students, falling enrollments) rather than the problem itself (ineffective or inadequate teacher training). Improvements were focused, therefore, on such strategies as curriculum change and recruiting brighter students. According to Willis, these earlier training programs were limited and sporadic. More recently, however, the importance of professional preparation for distance teaching has gained acceptance. Today's faculty development programs concentrate on ways to improve instructional quality and help faculty members to better understand themselves as teachers and individuals.

Faculty attitudes. Some authors considered the effect of development programs on attitudes. A study by Walsh (1993) investigated the attitudes and perceptions of university faculty, both with and without experience with technology-based distance programs, toward this type of instruction. He identified that attitudes are influenced by factors like exposure, peer influence, barriers, and incentives to engaging in distance education. These faculty were greatly concerned about the quality of their interaction with students in distance education. Regardless of attitude, all faculty believed that training for distance education is both necessary and currently insufficient.

Black (1992), using a large sample of faculty at the University of British Columbia, examined faculty's familiarity with and support for distance education. Findings revealed that although a great deal of skepticism exists, increased support for this method of education can be fostered by development programs that focus on increasing faculty's familiarity with distance education, especially with methods to enhance interactions with students.

Heath (1996) in her doctoral dissertation studied the relationship between faculty knowledge about instructional technology and its use. Results of this study were similar to Black's, which indicated a positive association between knowledge of technology and its use, thus improving faculty attitudes about distance education.

Clark (1993) conducted a national study of faculty at public institutions of higher education to assess receptivity to distance teaching and media, as well

as methods used for delivery. His findings revealed that faculty who were familiar and comfortable with distance teaching held more positive attitudes toward distance education and related methodologies. Like the previous studies mentioned on faculty attitudes, this study suggested that a more sound knowledge of distance education and greater experience in its use may be positively correlated with general receptivity to the concept as well as to the specific media and methods.

Another study examined the perceptions of distance faculty concerning the differences in instructional methods after they had moved from the traditional classroom. Gehlau, Shatz & Frye (1991) found that after faculty became familiar with the distance environment, a number of limitations were recognized (e.g. reduced spontaneity). They acknowledged the importance of student interaction and actually asked for training on how to use the technology to foster increased interaction with students, how to design visual aids, and how to collaborate effectively with technicians and site coordinators.

Teacher effectiveness. In a study in which faculty identified the importance of faculty development, Egan, Sebastian, Welch, Page, Nkabinde & Jones (1992) concluded that distance education training, especially in instructional design planning, was necessary for successful student experiences with interactive television. Specific faculty learning needs identified in this study included the need to engage learners, maintain teamwork with others in course development, and adjust teaching methods to the technologies.

Dillon, Hengst & Zoller (1991) surveyed 88 faculty members teaching over video and audio networks to investigate their experiences in teaching by this method. While a low number had received instruction on how to use the technology, none had been informed on how to teach using this system or how to adapt the technologies to the design and delivery of courses. In addition, faculty had not been given information about the characteristics of distance learners.

These authors readily acknowledge the benefits of teacher education for student satisfaction and success in the distance learning experience. The factors identified provide knowledge of essential elements to include in faculty development programs. Particularly, the importance of effective communication for faculty in distance settings through skillful immediacy behaviours was recognized as being critical to success.

Hackman and Walker (1990) explored the effect of such interpersonal communication by distance faculty as praising students, calling them by name, displaying humour, and providing individual and frequent feedback on student satisfaction in the course. The study revealed that distance student satisfaction increased as personalized contact with the teacher increased.

Williams (1994) explored the relationship that exists between faculty development programs for distance educators, the motivational response of students, and student perceptions of the delivery of instructions. She interviewed physicians who received continuing medical education through

distance technologies. The findings implied statistically that educators who received faculty development programs delivered instruction that was more stimulating and motivating and which was presented in a more effective manner than those who did not receive these programs.

Instructor competencies were found to contribute significantly to instructional effectiveness in a study of student responses regarding satellite classes. Collins & Murphy (1987) identified such important distance faculty skills as knowledge of and interest in the material, technical competence, good voice quality, clear presentation with good eye contact, animated body language, enthusiasm, and genuine interest in the student.

Burrage & Howard (1991) also found evidence of specific instructor competencies that encouraged student and teacher interaction. Students in this study noted that such teacher skills as silence to encourage reflection, using direct questioning techniques, providing frequent positive feedback, personalizing interaction, and careful planning of activities enhanced their learning experience.

A review of the literature on the benefits of faculty development programs in distance education has revealed a number of important advantages. When one considers the contrasting challenges faced by the traditional classroom teacher and those confronting the distance teacher, there can be little doubt as to their critical importance. Several research studies have indicated more positive attitudes about distance education by those faculty and administrators

who have an understanding of its methods than by faculty not exposed to distance methods and technologies. So, too, the evidence is plentiful of enhanced teaching effectiveness following well-planned faculty development programs that address the unique learning needs of its participants.

Elements of a Successful Faculty Development Program

Effective faculty development programs are of many types depending on the specific learning needs of faculty and the resources available to deliver them. A review of literature of distance faculty training programs indicated that they range from one day to week-long seminars. Each institution designs a program that is most suitable to its personnel and financial resources and to the technology and programming to be utilized.

Shaeffer, Kipper, Farr, and Muscarella (1990) explained the general rationale for such programs. Faculties' request for training, the risk of faculty avoiding the use of distance technologies without training, and improved teacher effectiveness are among the main reasons why institutions establish these training programs.

Cuffman and MacRae (1996) agreed that faculty training programs are planned mainly to improve teacher effectiveness and to avoid rejection by the faculty of innovative technologies to deliver instruction. These authors, however, contended that faculty development programs also provide an opportunity to (a) draw on veteran distance teachers' expertise to work with new

faculty, (b) show employees the resources available for distance education, and (c) tie distance education to the institution's educational and outreach missions.

This, in turn, enhances its recognition and acceptance in the educational community.

Willis (1994) described four examples of distance faculty development programs commonly used both nationally and internationally:

- (a) one-on-one sessions that cater to the unique needs of specific faculty and individual courses.
- (b) campus-wide workshops—effective for getting faculty together to address general questions and provide direction for distance programs established at that institution.
- (c) self-paced instructional print materials—designed for independent review of distance concepts.
- (d) an integrated approach—considered to be most effective because it combines institutional efforts in addressing the unique challenges faced by its faculty with training by necessary formats. Using this approach, specific faculty interests, backgrounds, and desires can be addressed and the appropriate approaches to teacher education can be utilized.

To ensure effectiveness, Willis (1994) also contended that these programs should comprise specific important characteristics:

- (a) During these workshops administrators must honestly address faculty's concerns and questions as well as encourage faculty's early involvement in the planning process.
- (b) Technical information provided during these sessions must be described in the language of the user to ensure easier understanding by faculty. So, too, technical advice must accommodate a faculty member's schedule and teaching style, must be offered in a supportive manner, be readily available, and provide straight forward suggestions for improvement.

- (c) Hands-on experience with use of the technologies is important to faculty during these training programs to enhance their understanding of what it is like to be a distance student at a receiving site.
- (d) Information that is useful for immediate application should be provided. Important techniques that need to be discussed during these sessions include increasing student participation and motivation, understanding students' unique needs, enhancing group cohesion, fostering student-student interaction, adapting traditional instruction to the non-traditional learning environment, and evaluating instructional effectiveness. As well, faculty should receive learning packages for their own use that describe a step-by-step process for developing and delivering effective distance instruction.
- (e) Emphasis must be placed on current research in the field of distance education that addresses teaching methods and student learning. Through application of research findings, teachers should be provided with suggestions for improving the relevance of examples used in their instruction based on students' unique experiential backgrounds.
- (f) Although it is recognized that distance teaching is not appealing to all faculty, efforts should be made during in-service training programs to enhance the interest of those faculty who are enthusiastic about this non-traditional teaching role. The institution's continued support for distance teaching, equally with on-site classroom teaching, through faculty incentives should be clearly expressed.

Including these characteristics will, undoubtedly, enhance faculty's interest and motivation to learn more about their new role. In turn, if the institution is committed to providing the best possible faculty development programs, positive attitudes will be promoted among faculty in the continued use of these alternative delivery systems.

Institutional Support for Faculty Participation in Distance Education

The literature on faculty issues in distance education is replete with references to the many barriers faced by distance faculty within their working environments, barriers that ultimately affect their willingness to participate in distance programs (Dillon & Walsh, 1992; MacNeil, 1990). Discussion in this paper has focused on the common barrier of insufficient training opportunities to prepare for the new role of distance teacher. In addition to this barrier, it is considered necessary to briefly address other administrative concerns commonly cited by distance faculty at conventional universities and colleges.

Barriers frequently noted in the literature included the additional workload, lack of time, few career advantages or rewards, lack of institutional policies that address issues unique to distance education, and lack of adequate funding for technical support, equipment, and materials (Dillon, Hengst, & Zoller, 1991; Dillon & Walsh, 1992; MacNeil, 1990; Parer, 1988; Willis, 1994).

Many faculty who have taught at a distance perceive it to be "less rewarding, offering fewer career advantages, and less scholarly than other teaching activities" (Dillon & Walsh, 1992, p. 10). Parer (1988) found that participating faculty believe distance education lacks prestige among colleagues in traditional settings. There is little doubt that, if the successful growth of distance education is to be ensured for the future, its principles and methods must be embraced by these institutions' most valuable resource, the faculty. It is

imperative, then, that distance teachers receive the renewed commitment of administration and indeed the entire institution. In addition to fostering teacher satisfaction and acceptance, this much needed support sets the tone for institution-wide adoption of distance methods and promotes the mainstreaming of distance teaching within the educational mission of these institutions (Dillon & Walsh, 1992).

Several authors provide recommendations to institutions for reducing the existing barriers to distance faculty participation so that the potential of distance education can be achieved. Sherwood, Armstrong, & Bond (1994) emphasized the importance of faculty involvement in the planning process, such as selecting the appropriate technology, deciding among instructional options, and identifying their own learning needs for training programs. This incentive, according to Sherwood et al. (1994), will promote positive attitudes toward the technology, reduce the anxiety of using these new methods, and encourage creativity in designing and delivering instruction.

MacNeil (1990) agreed that active involvement of distance faculty in the planning process, including decision making about technology, is vital if faculty are to accept these new methodologies. With the provision of technical coordination and support to enhance the decision-making process, it should be faculty who makes these choices as they are the ones who will be using the technology for instructional purposes.

Olcott & Wright (1995) went beyond identifying the important role of faculty in planning distance programs to emphasizing that their involvement at this stage should be in providing instructional leadership to others in the institution. These authors stressed that not only must faculty be intimately involved in the instructional design process, student support structures, development of training programs, and in evaluation, but they can play an "advocacy role for distance teaching to departmental chairpersons, deans, the executive administration, and perhaps, most importantly, to students" (p. 9).

The element of time in reducing faculty's resistance to their changing role was also addressed by Sherwood, et al. (1994). Recommendations included that administrators should provide realistic time frames for the teaching practises of distance faculty including adequate time to learn the new skills of distance teaching through comprehensive faculty development programs.

Willis (1994) contended that the institution must realize the time-consuming efforts of distance faculty in conducting "background work" needed to adapt traditional instruction for distance delivery or to develop a new distance course. A well-renowned researcher and author of distance education, Willis noted that, generally, it takes about twice the time to develop a distance course as it does to develop and organize one for classroom use.

MacRae & Cuffman (1995), in a qualitative study of faculty's experiences using television as the medium for distance instruction, reported that distance faculty identified the need for greater time to prepare lectures, to communicate

with students during instructional sessions, and to encourage students to participate. Recommendations of their study included providing release time and/or substantial support for faculty teaching on television such as involving experienced distance teachers as mentors for new faculty, providing adequate training, and adjusting their workload accordingly.

In describing Western Illinois University's successful experience with distance learning, Barker & Dickson (1994) maintained that teaching a distance course requires more teacher time for planning and development than does a traditional course, especially if it is the first time a faculty member teaches by distance. Additional time is needed by distance teachers to make periodic visits to distance sites to meet with students, to hold office telephone conversations with students, and to ensure through much questioning during distance classes that students understand the content and are actively involved in the learning process.

Barker & Dickson (1994) discussed, as well, the need for support personnel on campus to work closely with distance teachers. A full-time instructional designer is necessary in most situations to collaborate with faculty in designing and implementing instruction as well as conducting evaluations and planning ongoing training programs. These authors also stressed the importance of including technicians among the distance program team, technicians who are skilled in installing, operating, and maintaining the distance technologies. Willis (1994) and MacNeil (1990), as well, adamantly stressed the

importance of support structures like these to sustain faculty motivation and satisfaction and to ensure the continued success of distance teaching.

In addition, if distance education is to be readily adopted by faculty in teaching institutions, their efforts must be compensated and rewarded equally with classroom teachers. Olcott (1991) wrote: "embarking on an endeavour such as distance teaching without providing appropriate recognition towards promotion and tenure will deter faculty participation" (p. 56). Several authors emphasized that the unique role and contribution of distance teachers must be recognized if they are to be effective.

Beaudoin (1990) suggested that a commitment to distance education from all levels of the organization, especially top administrators, will serve to break down barriers and overcome the structural and resource impediments that exist between traditional and non-traditional education. Policies that reflect the unique issues of distance education, specifically in relation to budget (for the allocation of human and technical resources) and to promotion, tenure, and merit must be developed and integrated into the academic policies of the institution (Dillon, 1989; Gunawardena, 1990;).

Olcott (1994) pointed out that it is top administration, including president, deans, and departmental chairpersons who set the climate for the acceptance of distance education throughout the institution. Through their critical role in allocating resources, scheduling, and approving teacher assignments and deciding which academic activities will be rewarded in the promotion and tenure

process, they determine the value and priority awarded distance learning within the institution.

MacNeil (1990) described reward systems needed within institutions that offer distance programs. Besides rewards like release time, adjusting workloads to meet increased demands, and adequate hardware, software, and technical support, MacNeil recognized the need for rewarding teachers who use technology to reach students. Promotion and tenure systems must provide for such rewards. He stated, "ultimately, faculty should be able to regard the use of technology as a means of moving up the ladder as well as gaining personal and professional renewal" (p. 13).

The tremendous impact of institutional support on the success of distance education and the receptivity and satisfaction of its faculty cannot be underestimated. Despite the many new technologies that contribute a great deal to the growth and success of distance education, it is the collaborative institutional effort and the attention given to policy, compensation, and human resource issues that make the greatest difference.

Summary

The field of distance education has experienced many changes. Distance teachers today more than ever before are confronted with many challenges. Methods of delivering course content have radically shifted from the early years of independent learning tools, such as books and videotapes to the highly

interactive computerized multimedia systems of today. This innovation has contributed significantly to the rapid growth in distance learning in the past decade.

With the increasing demands placed on institutes of higher education for additional and more diverse learning opportunities, it is inevitable that distance education will continue to gain momentum in the educational process. Instructional methods and procedures will continue to change with new and improved technologies appearing and being implemented more widely. As the accelerated growth of distance education continues, more and more educators will be expected to reach out to these non-traditional students by accepting the new role of distance teacher. Those who assume a distance teaching role will be compelled to keep abreast of the changes by effectively incorporating new technologies and methodologies in their distance teaching practices. However, without the adequate training and incentive structures in place to support faculty in their endeavour, the quality and success of distance education may be compromised.

Program evaluation is yet another crucial element of the process of improving learning in distance education. Outcome assessment activities, in particular, must be ongoing so as to keep abreast of implementation changes if distance education is to have a positive impact. Evaluators need to use qualitative as well as quantitative methods to acquire an understanding of

learners' perceptions about the learning activities as well as academic achievement outcomes.

Such evaluation research will shed light on unanswered questions related to how the new technologies that connect students with teachers affect academic performance and attitudes. The results of these evaluation measures can be used to inform and direct future program planning, design, and implementation.

Paper III

Student Outcomes of Distance Education

Evaluation plays many important roles in education from appraising the curriculum to providing a basis for policy decisions and accrediting schools. Regardless of the focus of educational evaluation, however, a single important goal is pursued: to determine the quality or worth of whatever is being evaluated (Scriven, 1973).

Because guiding and supporting students in their learning is an important task of educators, a great deal of emphasis is placed on evaluating the process of student learning. Teachers eagerly seek feedback concerning students' academic achievement and level of interest and satisfaction with their courses. Through this evaluation activity, teacher awareness of the quality of the learning experiences they provide and the effectiveness of the programs or courses they teach is created. Their commitment to quality in teaching and learning spurs teachers to apply the data collected through evaluation to their practice in hopes of facilitating enhanced learning experiences in their classrooms.

The necessity for evaluation within conventional education programs applies equally to distance programs. Sweeping changes are occurring in this exciting educational field, changes like the rapidly growing numbers of institutions offering distance courses since the advent of interactive computer

technology. Thorpe (1993) stressed the importance of evaluation to the future success of distance education. Educators need evidence, she said, of the effectiveness of the many different models and systems ventured, evidence that the student is learning or learning better from teachers and from materials being prepared. By continually gathering information about the learner and the learning, distance educators can closely monitor the quality of the learning process so that necessary improvements can be made.

This paper examines and discusses current literature on evaluation of student achievements and experiences as distance learners. The author presents research findings and other relevant literature on assessment of how well students learn through distance education courses or the extent to which desired outcomes are attained. Comparative analyses of student outcomes in distance and conventional education are addressed. In addition, discussion focuses on the students' reactions to distance learning, such as their feelings and impressions of distance courses and their level of interest and satisfaction with learning through unconventional instructional methods.

The Need for Evaluation in Distance Education

Evaluation of the impact of courses and programs upon student achievement is of great importance in all educational settings. In the rapidly changing learning environment of distance education, ongoing evaluation is essential to determine the value, quality, and effectiveness of the many

innovative technologies and instructional strategies employed. At a time when media used to deliver distance programs is rapidly being developed and improved, both distance teachers and students alike struggle to keep abreast of these innovative tools for learning. Distance methods are constantly changing to provide better and more immediate interaction between teacher and student.

Undoubtedly, the aim of these exciting advances in the distance education process is to create an effective learning environment in spite of the distance constraint. However, both teachers and students are speculating on whether these new media will result in mastery of course content. Through ongoing collection and analysis of data on student reactions, attitudes, and opinions of how effectively teachers have used these technologies to deliver courses and on students' academic performance, teachers can closely monitor the progress of these changes. As Thorpe (1993) pointed out, distance education "is still an innovation and in the early stages of its development" (p. 2).

Because of the unavoidable element of trial and error for educators developing distance courses, they are challenged to provide optimum opportunities for learning. Evidence that the quality of these courses is comparable to or better than traditional on-site courses must be provided. Distance educators must clearly show that students using these innovative instructional methods perform as well or better than students in traditional learning environments. Thus, formative and summative evaluation of courses and programs is vital to the future success of distance education.

Morabito (1997), a renowned international adult distance educator, emphasized the importance of demonstrating the effectiveness of distance programs through ongoing evaluation. In the past, educators in conventional classroom settings were reluctant to accept that distance education students could achieve grades that were comparable with their on-campus counterparts. It was felt that learning was impeded because distance students were not in the traditional classroom and thus had little opportunity for interaction. Morabito pointed out that since the advent of learning technologies that greatly improve student-teacher and student-student interaction, distance education is becoming a well-respected learning method by leaders in the mainstream of education, especially higher education. Educators in conventional settings today recognize and acknowledge its merit and readily support this mode of delivering instruction as an effective means of meeting the growing demands of non-traditional learners into the 21st century (Morabito, 1997).

Emphasis must, therefore, be placed on providing evidence of the effectiveness of distance methods and on making necessary improvements. In this time of new developments in technology to deliver information, distance students' attitudes, opinions, and performance must be carefully examined through formal and informal evaluation practices. Only through careful analysis of evaluation data and dissemination of findings can distance educators continue to improve the quality of distance methods so that equal educational

opportunities with traditional students can be provided for these learners (Morabito, 1997).

Research on Learning Outcomes

In reviewing the literature on the results of students' learning in distance education, this author searched for evidence that distance students perform as well or better than their on-campus peers while utilizing the various communication and information media available.

One or two-way audio and video instruction. The evidence is abundant that distance students who learn by interactive or non-interactive audio and video systems achieve academic grades that are comparable to or better than traditional classroom students. Keck (1992) compared the learning outcomes of graduate program nursing students enrolled in a telecourse with the learning outcomes of students enrolled in the same course in the classroom setting. The same teacher taught the course in both settings, and telecourse requirements did not differ from traditional class requirements. Learning outcomes were measured by comparing student grades on course examinations and assignments. The impetus for this study came from concerns among faculty that the quality of the educational experience in graduate education would be compromised by the limited interaction in distance courses. Findings indicated no significant difference in learning outcomes between students in traditional classrooms and in telecourses. These findings suggest that students, even

graduate students whose classes are typically small and highly interactive, are as successful in learning the content of distance courses as their peers in traditional classroom settings.

These findings are supported by Kooker, Itano, Efinger, Dungan, & Major (1994) in a study of a graduate nursing program at the University of Hawaii. They demonstrated that interactive television with two-way radio and two-way video capability was valuable in conducting successful graduate-level nursing seminars to students living on remote communities of the Hawaiian Islands. In a comparison of learning outcomes with students taking the same course with the same instructor in the classroom setting, course grades were very similar. Furthermore, ratings from all students' evaluation of the course failed to show significant differences. Participants who used the interactive television network to communicate with peers and the teacher on campus felt it provided a unique face-to-face opportunity to discuss concepts, analyze issues, and share ideas without technological difficulties.

Parkinson & Parkinson (1989) compared the academic achievement of practical nursing students doing a pathophysiology course in the traditional classroom with students doing the same course with the same instructor by interactive television at remote locations throughout the state of Utah. Despite the fact that distance students in this study received only 10 hours of formal lecture time while classroom students received 33 hours, there was no significant difference in examination scores between the two classes. Remote

students did, however, express discontent with learning from a distance teacher and found the experience to be "impersonal" (p. 500). These researchers attribute the similar learning outcomes in these very different settings to the high motivation level of adult learners, despite constraints, as well as to the extra written supplements (e.g. study guides, charts, diagrams) provided to these distance students.

A similar comparative analysis by Stanton, Floyd, & Aultman (1995) investigated the effects of distance learning on student outcomes in general studies university courses. One group of students in this study were remotely situated and received the same instruction by interactive television as the second group who attended class at the on-campus studio from where the instruction was delivered. A third group of traditional classroom students with the same instructor who taught the remote and local sections of the course was used for comparison. These authors found that distance learning conditions of this type did not adversely affect student achievement. This study found as well that learning by distance did not significantly produce negative reactions from either students or instructors at either the remote or local sites. The authors added that, if positive reactions are to continue, ongoing changes will need to be made in course design to keep pace with the many innovative technologies.

Kabat & Friedel (1990) yielded comparable results. They compared learning outcomes of distance students at a remote site electronic classroom who received instruction via two-way audio and video systems with the outcomes

of their peers who attended the same class at the origination site with their instructor. Not only were there insignificant differences in grade scores among the two groups of learners, but approximately two-thirds of all these students indicated they felt they learned as much in the electronic class as they would in a regular class and would take another course by this method.

Another study at John C. Calhoun State Community College in Alabama was conducted to determine if there was a significant difference in grade distribution between sections of a course taught by telecourse format and sections taught by the same instructor in the traditional classroom. This study, which examined data from 18 telecourses and 18 traditional courses, concluded that there were no significant differences in grade averages between the two groups. However, the study found that student completion rates were higher in the traditional classroom (Searcy, 1993). This result is contrary to the results provided by Hogan (1997) where 75% of distance students completed the course as opposed to 72% of traditional students. Such contradictory findings warrant further research to examine completion/withdrawal rates of distance learners.

Shoemaker & Fairbanks (1997) compared the grade performance profiles of distance education graduates of a baccalaureate nursing program to their on-campus graduate cohorts. Data was collected over a seven-year period of distance delivery via interactive television to nurses in rural areas. Grade point average comparisons showed competitive academic performances among

distance students as compared with their on-site peers. As well, the highest grade point average of both groups was held by an off-campus student for the final three years of the study. Results indicated that students off campus receiving instruction via interactive television achieve grades that are comparable to or better than on-site students (Keck, 1992; Parkinson & Parkinson, 1989; Stanton et al. 1995).

Likewise, studies by Daly, McClelland & Yang (1994), Freeman, Fell & Muellenberg (1996), Goodyear (1995), MacFarland (1996), Martin (1990), Nixon (1990), and Scott (1990) supported findings that learning outcomes of students taking post-secondary courses by a two-way interactive video format are not significantly different from students in traditional classes. Myer, Brenner, & Wood (1995) examined learner outcomes of distance nursing students who received instruction by video tapes shown on a bus as they commuted to and from a clinical learning site. Videotaped presentations were supplemented with print materials. The students' academic performance was compared with that of traditional students taking the same course in the classroom but with live lectures from the instructor instead of videotaped presentations. The authors found similar academic performances between the two groups and concluded that the non-interactive video learning format supplemented with printed materials may be considered an "effective teaching mechanism" (p. 31). Although the distance students experienced frustrating technical difficulties, their positive comments about the course included that they learned a great deal, and

it was worth their time. The findings of this study are particularly surprising in view of very limited teacher/student interaction, the persistent poor quality and non-interactive nature of the media, and the unconventional learning environment. The authors felt student learning was enhanced because of typical adult learner characteristics like cohesiveness as a group, time-motivation, and a desire to meet a learning need (Myer et al. 1995).

Haynes & Dillon (1992), recognizing that the abundance of comparison studies throughout distance education literature suggested no significant differences in academic performances between distance and traditional students, focused their research on the effects of studying higher order learning concepts at a distance via telecommunications technology. The authors used qualitative and quantitative methods and a control group to measure differences in learning outcomes between the on-campus class and the distance students who received instruction through the compressed video system. Both groups consisted of students who were older than traditional students and who had full-time jobs and families.

Findings of Haynes & Dillon's study (1992) indicated that the delivery system had no impact upon either low- or high-order levels of learning as no significant differences in learning outcomes were identified. However, also investigated by these researchers were students' attitudes toward the telecommunication system and their level of interaction in the group, both with the teacher and the students. Although students at the remote site expressed

very negative attitudes about the medium, indicating they would be reluctant to recommend it to other students, it did not impede their learning. Another interesting finding was that although the distance students interacted with the teacher much less than the on-site students, they interacted with other students at the distance site more often. These findings, like those of a later study by Myer et al. (1995), suggested that distance adult learners' strong reliance on peer support and teaching serves positively to enhance the learning experience.

Souder (1993) conducted a "natural experiment" that examined the effectiveness of distance teaching and learning. The author taught the same graduate-level course at three different universities. One course was taught by video-based distance media while traditional on-site methods were used for the other two. Effectiveness was measured by comparing the academic performance of all three student groups on course examinations, term papers, and other assignments. Results indicated that the distance learners achieved higher mean grade scores than the on-site student groups in similar course requirements. Students in this study also provided evaluation data on their perceptions of the quality of the instruction and course content, effectiveness of the technology, and aspects of the communications.

The distance learners, unlike the traditional learners, strongly supported distance learning and felt that interaction with the teacher or with other students is not vital to the learning process. Of particular note in this study was the very negative, "disdainful" comments by traditional students towards distance

education, viewing it as a second class method, despite their limited experience with studying by this method. Additionally, the distance group felt that they had developed close peer relationships despite the vast geographic distances between them and the fact that they did not know each other prior to enrolling in the course. That same "kindred spirit and bonding" was not evident among the other classes who tended to view learning as an individual endeavour (Souder, 1993). The author credited much of those distance students' success in learning to the strong peer support and social contacts as well as the frequent ongoing feedback from the teacher.

Computer-based instruction. As this literature review has demonstrated, empirical evidence of the effectiveness of distance courses employing audio and video technologies, mostly interactive television, is abundant. However, by comparison, there are substantially fewer research studies validating student performance as an indicator of the effectiveness of the rapidly evolving computer technologies used in computer-mediated communication such as e-mail and on-line computer conferencing.

These media can provide ideal learning experiences by placing students in a stimulating, highly interactive, yet private, environment. Purposeful and reflective discussions can take place asynchronously as students are ready to respond to other students and/or the instructor. According to Richards, Gabriel, Chin & Clegg (1992), this exciting, relatively new form of education is particularly attractive to adult learners with busy lives who cannot leave their

homes to pursue learning activities. This is because it offers the convenience of time and place independence while providing a highly interactive and social learning environment. Computer-based education "brings to distance audiences the closeness of the traditional classroom" (p. 20). Their research examined computer/modem college students' ages, grades, and course completion rates as compared to traditional students. They found that, although the sample was small, these computer/modem students were older, had a higher motivation to learn, achieved higher course grades, and had a lower drop-out rate than their traditional counterparts. They concluded that this new field of distance delivery should be more actively pursued.

Martens, Portier & Valike (1995) carried out a similar comparative analysis with 502 Belgian college students taking a first-year statistics course. The effectiveness of computer-based interactive learning environments was measured by comparing the outcomes to those of students in a printed-material distance learning environment. Students in traditional face-to-face lecture environments were used as the control situation. This study's results showed no marked difference in learning outcomes when the three groups were compared. The relative effectiveness of independent study, and especially of a computer-focused learning environment, was identified.

In a similar comparative analysis of student achievement in a competency-based computer course and the same course taught in a traditional classroom, Mortenson (1995) found no significant differences in scores. He

concluded that students in electronically expanded classrooms have learning outcomes comparable to those taking the course in the classroom.

Davie (1988) praised computer-mediated communication for distance education noting its ability over other media to enhance student-to-student interaction to a level that is analogous to seminar discussions previously only possible in traditional classroom settings. Because it allows asynchronous participation, it provides "an equity of access" which benefits slower students who may need time to reflect, to compose, and to enter a valid response to the discussions, an advantage not possible in face-to-face meetings. Her research, a descriptive case study, focused on analyzing the participation, satisfaction, and achievement of two groups of graduate students in two computer-mediated communication courses. The courses were similar, requiring students to read course textbooks and articles in preparation for discussion of their ideas in an on-line conference. In addition, they were required to write two short essays and a final essay in pairs or small groups on the network. No other means of communication was used.

Davie (1988) found these students to be quite successful in their efforts to develop effective strategies for writing as a group. Students in both courses frequently logged on to the on-line conference to read other students' comments or to make an individual response. Students' final grades (although quantitative comparisons were not made to courses in other modes of delivery) were equal to or greater than those in similar courses offered on site. Student satisfaction was

analyzed through discussions at the end of the course and found to be quite high in both courses. Students particularly liked the convenience of being able to participate in discussion at times that did not conflict with other responsibilities and felt the structure of the course compelled them to assume responsibility for frequent and active participation in the learning process. Their comments concerning having to communicate solely on line were very favourable. This author supported the use of computer conferencing as an effective way for students to connect with each other and initiate collaborative learning.

Cheng, Lehman & Armstrong (1991) examined the effectiveness of a computer-mediated communication system to deliver graduate education to remote sites within the state of Indiana. Specifically, these researchers compared achievement scores, time-on-task, and student attitudes of remote-site students with these factors in a group of students taking the same course with the same instructor in an on-campus class. Pre-study data determined that other than off-campus students being older, the two groups displayed similar knowledge of course content, similar attitudes, and similar educational backgrounds. Study results indicated that no statistically significant difference existed between the two groups in final grades or in their positive attitudes towards the course or instructional media used. However, a greater time-on-task was needed by computer conferencing students to learn effective use of the computer network. The authors concluded that computer conferencing as a distance learning method is as effective as the traditional classroom method.

Research on Student Attitudes about Distance Learning

New technologies and strategies that improve interaction between teacher and learner are rapidly emerging in distance education. Emphasis is being placed on examining student outcomes of learning through such media as interactive television and computer-mediated communication. Numerous studies have attempted to judge the quality and future success of these innovations; however, many questions remain unanswered. The literature review suggests that researchers, in examining effectiveness, focused heavily on measuring student performance in terms of academic grades. A relatively neglected outcome measure, it appears, is the learner's perceptions and attitudes towards the distance learning environment.

Biner et al. (1994) argued that the maintenance of positive student attitudes can result in programme-related benefits but, more importantly, student benefits that include lower student attrition, higher levels of motivation, increased enrollment, and a greater commitment and loyalty to the program. Jones, Scanlon, Tosunoglu, Ross, Butcher, Murphy, & Greenberg (1996) supported the view of Biner et al. (1994) that, while evaluating the effectiveness of distance methods is crucial, the importance of including the educational situation as a whole and focusing on the learner should not be dismissed. These authors contended that findings from comparative approaches to evaluating effectiveness in distance education (most common in the literature)

give answers on "what" learning has occurred but not on "how" that learning has occurred. "Yet, on many occasions, the 'how' is as important, if not more important than the 'what'" (p. 10).

Evaluating the process of student learning by examining student attitudes about the distance learning environment, their level of interaction with other students, obstacles they encounter, and level of satisfaction with courses is an equally important criteria by which to gauge the success of distance education. From the literature, it is clear that such data plays an important role in enlightening educators about the fundamental question of the effectiveness of distance methods in helping students to learn. As a result of such studies, program improvements can be made to improve or maintain positive attitudes and provide satisfying, enjoyable learning experience for distance students.

Biner, Welsh, Barone, Summers, & Dean (1997) surveyed undergraduate college students in 17 live, interactive telecourses at 68 remote sites about their satisfaction with various facets of the course, such as the instructor/ instruction, technology, course management, as well as their overall satisfaction with the courses. The students' performance in the current course was calculated in relation to prior overall academic achievement to assess student motivation. The primary goal of the study was to determine if class size predicted students' satisfaction. Results indicated that the size of the group at the remote site significantly predicted satisfaction in all facets of the course, overall satisfaction, and relative performance. The more populous sites were associated with more

negative student attitudes and with lower levels of relative performance. As well, 45 of the students in the study attended classes privately at home, and it was these students who provided the highest ratings of telecourse satisfaction and academic performance.

Paul (1990) in a doctoral dissertation conducted a quantitative analysis of the effects of three different modes of course delivery on three educational outcomes—progress rate, satisfaction, and achievement. Subjects were non-traditional students in an undergraduate business degree program. Her findings showed high levels of overall satisfaction (over 95%) among students enrolled in two external degree programs, but students attending on-site classes were less satisfied. Although progress rates among the three groups showed statistically significant differences, academic achievement was similar for students in all three delivery systems.

Johnson (1993), in a similar study, examined the influence of instructional mode, learning style, academic major, and gender, on student attitudes and achievement in distance and traditional versions of a teacher education course. His findings revealed that student learning style, academic major, or gender did not significantly impact on achievement in either of the two groups. However, even though distance students achieved higher scores than traditional students on the two objective exams designed to assess achievement, they were more likely to be dissatisfied. Their discontent was related to the poor quality of taped lectures, examinations, and course printed materials. Johnson concluded that

improvements in the quality of the instruction will enhance the learning experience of students in remote sites.

It is interesting to note, in the studies by Paul (1990) and Johnson (1993), the lack of a positive correlation between achievement of distance students and their attitudes about their learning experiences. These studies support the notion that successful grade performance cannot predict whether students have had a positive learning experience. Thus, incorporating the learners in the evaluation process as participants by seeking their opinions and attitudes provides valuable information about the quality of the learning process.

A study at Ferris State University compared the attitudes of students who had completed college courses by interactive television at remote sites with students who had completed the same course in the traditional classroom. Hunsanger (1990) found that, other than problems with hearing the speaker at the distance sites, distance students were as satisfied with the instructor, instruction, equipment, and learning environment as their peers in the classroom. As well, distance students expressed satisfaction that they had chosen to do the course by interactive television over traditional instruction.

In another study that compared the reactions of students in a video conferencing-based course with those of students in a traditionally delivered course, Furst-Bowe (1997) found students in both sections of the course to be particularly pleased with the organization and presentation of content, the teacher's knowledge base, and positive attitude. Distance students, however,

expressed concerns about class time lost due to technical difficulties, problems with scheduling group work among students who live in different cities, and the inability to interact with the teacher in person during class time.

These findings support those of an earlier study by Smith and McNeilis (1993) who investigated how distance education affects student attitudes as well as academic performance. These authors conducted a comparative analysis of three learner groups: remote-site distance learners, an on-campus group where the class was hosted, and a conventional class. Comments from the remote students about learning at a distance were generally more positive than the host-site students. Achievement data revealed no significant differences among the three groups. However, despite the positive attitudes expressed by the remote students and the fact that they were receptive to distance learning again in the future, they stated that they liked the course better when the teacher was on site to address questions.

The results of these studies by Furst-Bowe (1997) and Smith & McNeilis (1993) appear to emphasize the critical role of the instructor in successful distance learning. While the lack of interaction remains a major criticism of distance education, advocates of distance learning believe the teacher can overcome the distance constraint by providing well-developed learning materials, creating opportunities for participation and a means of providing timely feedback, demonstrating effective presentation skills, and being prepared to use the media to its potential.

Hinton and Oleka (1996) surveyed two classes of undergraduate students at Eastern Kentucky University about their attitudes towards the level of learning, confidence, comfort, effectiveness of the site facilitator, as well as advantages and disadvantages of a course by television at distance sites. Responses among both classes were unanimously positive. Students felt they had learned as much by distance as they would in the traditional classroom and saw far more advantages than disadvantages to distance education.

Although some variables like lack of contact with the teacher, class size, and technical difficulties have been shown to impact negatively on student attitudes about learning at a distance, it can be concluded from these data that students' attitudes are generally positive. It appears the medium itself has little or no effect on student satisfaction. Instead, effective instruction seems to be positively correlated with satisfied distance learners. Undoubtedly, the efforts of distance teachers to provide optimal learning opportunities for their students will yield more positive attitudes.

Summary

As acknowledged in this literature review, numerous investigations in the field of distance education have operationalized the effectiveness of the different technologies in student learning through an examination of outcomes. In most of these studies, researchers have attempted to demonstrate the effectiveness of distance instruction by comparing the achievement levels of distance students to

those of students who are enrolled in the same course with the instructor either in the traditional classroom or at the on-site studio where the class is being delivered. The studies quoted in this paper suggest that distance students perform academically as well or better than their peers in the traditional classroom. The rapid increase in use of computer technology in recent years, which affects the way in which instruction is planned and delivered, has not significantly changed learning outcomes.

From this discussion, it can be concluded that distance education students are as successful in academic performance as on-site students regardless of which technology is used. Clark (1983) concluded that "media are mere vehicles that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes changes in our nutrition" (p. 445). Much controversy has surrounded these comments, especially given the significant growth in highly interactive instructional methods since that study. However, it appears Clark's comments still hold true even in graduate courses that demand a high degree of interaction. Instead of the medium chosen affecting achievement, research rather demonstrates the importance of effective instructional technique and a supportive learning environment as having a positive correlation with achievement success.

The literature emphasizes effective teaching behaviours as being of paramount importance to the quality of the learning experience. Stanton et al. (1995), among others, highlighted the importance of distance instructors

adapting teaching methods to new and progressive technological developments. Carefully planned and well-developed instructional activities that keep abreast of changes are required. Instructors must be proficient in the use of novel technologies and facilitate effective interaction and motivational techniques, however, to enhance the interest and active involvement of the learners (Stanton et al. 1995).

Research has emphasized that distance students tend to substitute diminished teacher contact with peer contact for the purposes of enhancing the learning experience. It appears this level of learner-learner interaction has positive effects on the learning outcomes of achievement and attitudes. Adult learners, particularly, are conducive to this type of collaborative learning relationships. Through ongoing discussion and support for each other, they "simulate the advantages of a traditional classroom atmosphere" (Myer et al. 1995, p. 32). According to Souder's (1993) research, distance learners form support relationships with their peers that are far more powerful than relationships formed in the classroom.

Instead of the delivery method affecting student satisfaction, it is apparent that satisfaction levels are improved by such factors as effective instruction, equipment that is in good working condition, and the opportunity for frequent contact with the teacher, prompt feedback about course assignments, and affiliation with other distance learners.

This literature review has provided empirical evidence that distance students should not be viewed as disadvantaged in the quality of that learning experience or in their achievement of successful grades. In fact, several of the research studies reviewed have indicated advantages to distance learning over traditional methods. Besides the convenience of being able to study at home when other responsibilities make classroom courses too difficult to pursue, distance students benefit from a unique learning environment that allows privacy yet strong peer support when needed.

Conclusion

Adult education today is experiencing a paradigm shift. The focus is no longer on remedial education for those individuals who did not complete high school. Instead, attention has turned to the concept of lifelong learning that includes a wide span of adult learners, from the highly educated to those perceived as functionally illiterate, from the economically disadvantaged to the wealthy affluent, from the young adult to the healthy seniors in our society (Shoemaker, 1998).

This transformation is a reflection of the rapidly changing realities of today's world. One major force propelling this shift is our aging population and the trend towards educational programs among older adults (Merriam & Caffarella, 1991). Additionally, the impact of an unprecedented knowledge explosion and new communication technologies that have created a demand for

diverse qualifications within the workplace cannot be ignored (Connick, 1997). The tradition of completing a post-secondary education program immediately following high school and securing a position in a single organization for an entire working career has been replaced by one that includes ongoing education programs and career changes (Shoemaker, 1998).

Today's adults portray a passion for continued learning, whether it be to meet the changing needs of the global community or to satisfy a personal interest. It is predicted that the amount of learning is likely to increase in future as our rapidly changing world becomes more complex (Connick, 1997). Such a vision has major implications for institutions for adult learning including higher learning.

One of the important questions to consider is whether or not existing colleges and universities can keep up with the rapid pace of change in the technological and social structures of our society. To meet the growing demands for higher education, emphasis must be placed on the implementation of innovative approaches and methodologies that will allow flexibility, accessibility, and adaptability for all those who wish to enroll.

Distance education has much to contribute. It has the potential for significantly expanding access to adult learning, hence, providing greater educational opportunity and increased efficiency. Using new communication technologies, distance education today supports active, meaningful educational experiences to adults who are willing to assume responsibility for their own

learning. It is capable of responding well to the ever-increasing numbers of people in pursuit of higher learning. Particularly, it is responsive to working adults and those with scheduling problems or disabilities which prevent them from availing of education services provided by conventional systems.

Distance education is now taking its place in the mainstream of higher education alongside traditional on-campus programs. The approval it has received from educational leaders can be attributed in large part to the advancement in technologies to deliver instruction—technologies that have greatly personalized the communication between learners and their teacher. Through modern delivery modes such as computer networks, satellite networks, and audio and video systems, the traditional classroom is brought to the distance student. Thus, distance education is viewed by many as an agent for change, expansion, and diversity.

This discussion of three distinct, yet interrelated, topics on student learning in contemporary distance education has revealed an array of useful information that can guide the development and delivery of education programs by distance.

It is apparent from adult learning theory that adults prefer self-directed learning and desire student centred instructional activities that allow them to relate past experiences to their current educational venture (Knowles, 1984). A change in their life situation is usually the impetus to pursue learning, and adults are motivated by a desire to fulfill the identified need (Houle, 1961). Adult

distance learners, too, display self-directedness and learning needs and aspirations that are similar to those of their conventional education peers (Holmberg, 1995).

The research-based literature presented on student readiness recognizes the significance of qualities like maturity, a high level of intrinsic motivation, self-discipline, and an internal locus of control as important pre-requisites to a successful distance experience (Dille & Mezack, 1991; Ekins, 1992).

Field independence is the learning style most associated with the andragagogical notion of self-directedness (Brookfield, 1986). Research shows that field independent adult learners are more likely than field dependent learners to succeed in both the conventional and distance settings. Considering the nature of the distance experience, it is not surprising that such traits as autonomy, non-conformity, and abstract thinking associated with field independence are to be considered assets for distance learning.

However, of concern as distance methods assume an integral role in the provision of higher education is how distance education can respond to the learning needs of field dependent participants. These learners, who value conformity to imposed patterns and behaviours and authoritative control, desire a more structured environment than most distance programs provide. To achieve success, they require such external controls as study centres that provide assistance with developing appropriate study skills, goal setting, and establishing guidelines (Willis, 1994). Particular attention must also be paid to

ongoing mentoring and other facilitative interventions that promote satisfaction and good grades instead of frustration and failure with learning by the distance method.

Literature on teaching at a distance reveals that a common practice in conventional universities offering distance programs is to utilize existing faculty to facilitate the distance instructional process. Faculty report an expectation by these institutions to convert on-site courses they teach to the distance delivery method without consideration of the vital managerial and instructional changes needed (Cyrs, 1997). This custom places tremendous demands on the instructors, demands that can seriously diminish the quality of the instruction and the amount of time necessary to facilitate the distance learning experience for each student.

In turn, the effectiveness of on-site classroom instruction is altered as the instructor attempts to divide teaching expertise between the two settings. A negative implication of this scenario for distance education is that distance teaching is not perceived as a unique discipline within the field of education. When faculty in conventional universities and colleges are expected to assume both teaching roles and to use similar approaches and methodologies in each learner setting, the unparalleled features of distance education go unnoticed.

As this paper has outlined, distance teaching requires a special set of skills, knowledge, and attitude not common to conventional teaching. The distance teacher, for example, must demonstrate competence in designing

distance instruction, in using the technology, in facilitating the distance process, and in providing ongoing feedback (Willis, 1994). These and the additional teaching competencies summarized in this paper demand effective professional development that prepares faculty at a level of mastery and confidence in their new role.

Much of the literature attributes the success of distance education to the ongoing institutional support through such practices as assigning a reasonable workload, allowing adequate time to plan and develop courses, and recognizing faculty efforts (Sherwood, et al. 1994; Olcott, 1991). This paper has addressed this issue and emphasized the need for compensation and rewards for distance teaching faculty in a way that is comparable with those in traditional faculty roles.

It is essential that all teaching include interaction, dialogue, feedback, encouragement, and support between the teacher and the student. But, as research discussed in this paper has suggested, the communication does not have to be face to face. It appears that the quality and quantity of interaction is of greater importance regardless of whether it occurs in the classroom or through technology (Souder, 1993). Learners in distance settings achieve grades that are comparable to or better than learners in the classroom, and the type of media used for delivering instruction does not alter academic performance.

Whether the instruction is being delivered to a large group in a lecture theatre or to a small number of distance learners in their home settings, it is considered ineffective if it isn't presented in an organized manner reflecting the teacher's sound knowledge base and if it does not include meaningful and active participation by learners. It can be concluded from this review of the literature that students learn effectively and enjoy the distance experience when (a) course goals are set with input from the learner (b) the instruction fosters a linkage with previous knowledge and experiences (c) interaction with the instructor is friendly, supportive, and non-threatening (d) the opportunity for independence is provided (e) feedback is prompt and beneficial (f) peer support is available when needed (g) the technology is working properly and learners are comfortable using it.

Since the evolution of distance education as a viable alternative to traditional classroom education, research has been slowly shifting from a focus on achievement outcomes to the process of learning by distance methods. Researchers are endeavouring to better understand what and how individuals learn and what measures can be taken to improve the learning experience. Distance students today are not the passive, correspondence students of the past who received knowledge by completing learning materials somewhat independent of their teacher or their peers. Instead, today's learner acquires knowledge in large part through actively communicating, via technology, with peers and the instructor. Research is targeted, therefore, in this area.

Distance education has expanded dramatically in Canada in recent years. It has proven to be a feasible educational option to meet the growing demands of adult learners, especially non-traditional learners who are striving to balance their studies with work and family life. Universities and colleges today are offering full distance degree programs, including those at the graduate and doctoral levels, and are integrating new communication technologies, such as computer technology, with traditional audio/visual and print materials to deliver instruction.

At the University of Western Ontario and Queens University, students and faculty in the two-year Executive MBA programs use the distance method of interactive videoconferencing to hold lively discussions with a diverse group of people from all parts of the country.

In 1997 New Brunswick's TeleEducation NB launched one of the world's first virtual campuses on the world wide web. These electronic classrooms allow students to enroll, study, and pay for courses through the Internet. By the year 2000, Telecampus hopes to have 10,000 students taking courses on line (Statistics Canada, 1998). The Technical University of British Columbia, also known as Tech BC, will open in the year 2000 offering full undergraduate, graduate, and doctoral degree programs in such fields as software development and information systems management. Students will have the option of attending class on campus or pursuing the courses on line in their homes or

workplaces. Some will obtain their college education without ever being required to visit the campus.

Registration for distance courses at Memorial University of Newfoundland has grown by 88% in the past four years (G. Penney,¹ personal communication, March 12, 1999). This can be largely attributed to the incorporation of new technologies resulting in the availability of a wide selection of courses, including seminar courses and full undergraduate degree programs.

Memorial University's Telemedicine Centre caters to the telecommunication needs of both government and private organizations for education and health programming and research purposes. Through standard telephone lines, the Telemedicine Centre provides users with the ability to teleconference to any location around the world. Using equipment like personal computer-based work stations, interface communication devices, interactive audiographics with a computer-based telewriter and video conferencing through compressed video technologies, participants can experience real time, interactive audio and video communication. A recent initiative, the Remote Community Services Telecentre, uses a satellite facility to open access to full telecommunication services for remote areas of the province not reached by the telephone network (P. Dwyer,² personal communication, March 22, 1999). In

¹ Manager of Distance Education Development and Support.

² Project Coordinator, Remote Community Services Telecentre.

addition, a newly formed virtual design and development studio expands Memorial's capacity to design and develop programs in the new media learning environment. This will be effected through such multimedia strategies as CD-ROM creation, website development, and digital audio/video recording (K. Best,³ personal communication, March 11, 1999).

Initiatives such as these demonstrate that Memorial University of Newfoundland is on the cutting edge of distance technologies, and there is burgeoning interest within virtually all faculties. However, despite the obvious advantages of the sophisticated technologies such as the capability for real-time, two-way communication between teacher and students, even those in remote communities, they are often not optimally used in the delivery of distance courses.

Many classes currently available in distance education have been roughly adapted from traditional classroom material. Furthermore, the majority of distance educators continue to rely on the old, one-way systems of print, audio tapes, and video tapes (G. Penney, personal communication, April 1, 1999). As the literature highlights, administrators and faculty have not necessarily subscribed to the concept that modern distance education is at least equal, and sometimes superior, to traditional methods as measured by both academic performance and student satisfaction.

³ Multimedia Developer, Virtual Design Centre.

Distance education has much to offer in Newfoundland and Labrador because of certain unique characteristics of the province and its people. This author is particularly interested in potential application to the new baccalaureate nursing program. Many factors impact on this challenge.

1. The unique geography of the province.

The population of Newfoundland and Labrador is widely dispersed and of low density. The vast majority of those currently enrolled in the nursing program are rural students, some from remote areas who incur considerable travel and living expenses. In addition, 87.3% of current students are women between the ages of 17 and 40 years (J. Ellis,⁴ personal communication, March 30, 1999). Female students are more likely than males to have family responsibilities that make relocation very difficult (Pym, 1992). The expense of having to travel long distances and the stress of being separated from family members for extended periods can create many hardships.

2. The declining population

Due to demographics and out migration, Newfoundland and Labrador is faced with challenges of a declining population. With fewer secondary school graduates and more available career options, it will be imperative to recruit to the BN program more adults whom might otherwise not apply. Unless nursing

⁴ Consortium Coordinator, Bachelor of Nursing Collaborative Program.

institutions open education to meet the needs of adult students, they cannot expect to maintain their previous level of academic excellence.

3. Distance education will attract students of smaller and more remote rural communities, many of whom will then return to their hometowns to work as health care providers. This has particular appeal to aboriginal people.

4. Distance education may be cheaper. In the final analysis, it will likely prove to be cost effective as well as time efficient as it has the potential to reach more learners with fewer resources.

5. It promotes independence in learning, as well as flexibility in the content and organization of instruction. This accommodates the self-instruction model of learning preferred by adults, especially those who are fulfilling multiple roles.

6. In Newfoundland and Labrador, as in the rest of the country, computers are both widely available and increasingly familiar to students. In 1997, approximately 36% or one-third of Canadian households owned a home computer. As for the Internet, 13% in 1997 were connected, which is almost double the 1996 rate. In Newfoundland and Labrador, approximately 25% of households owned a computer in 1997, with approximately 10% using the Internet (Statistics Canada, 1999). In only a few short years, learners entering post-secondary education will have used computers their entire lives and are both facile and comfortable in using this learning tool.

Finally, the exploration, acquisition, and daily practice of communication technology will allow nurse educators in this province to join the cutting edge of the new technologies' application to education. These early "pioneer" educators will be instrumental in establishing innovative and adaptive approaches to serving a changing society. With the combined impetus of technologic access, know-how and faculty interest combined with enthusiasm and training, nursing education institutions in the province are well situated now, at the beginning of a new century, to join the nation-wide trend to modern distance education.

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