INVESTIGATING THE DESIGN AND DELIVERY OF QUALITY ONLINE DISTANCE NURSE PRACTITIONER EDUCATION

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Your file Votre référence
ISBN: 0-612-89632-3
Our file Notre référence
ISBN: 0-612-89632-3

Investigating the Design and Delivery of Quality Online Distance Nurse Practitioner Education

by

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A folio submitted to the School of Graduate Studies in partial fulfillment of the requirements for the degree of Master of Education

Faculty of Education
Memorial University

2003

St. John's, Newfoundland and Labrador

Acknowledgements

I wish to express my appreciation to Dr. Eileen Bragg and Dr. Roberta Hammett for their time, guidance and support that were instrumental in the completion of this paper folio. I also wish to thank my family and friends for their patience and encouragement through a challenging time - filled with study, work and family commitments.

Abstract

This paper folio is a compilation of three related papers that have relevance to the design and delivery of nurse practitioner education within an online distance education environment. The papers incorporate a review of the literature from the fields of educational technologies, adult education, and nursing education, as well as descriptions and reflections of my personal experiences as an adult educator in a nurse practitioner education program.

The first paper provides the context and background for an understanding of nurse practitioner education and the significance of maintaining quality standards with a move to online distance delivery. This background information is provided to acquaint the reader with the learner and the significance of quality education for the provision of competent nurse practitioners. It defines the term, *nurse practitioner*, through an overview of the evolution, role, and learner profile of nurse practitioners. It also briefly describes an example of the design and delivery of a traditional onsite Primary Health Care Nurse Practitioner Program (PHC-NPP) at the Centre for Nursing Studies in St. John's, Newfoundland and Labrador for later discussion and application.

The second paper takes an in-depth look at the technology, learner, faculty and administrator which have been identified as critical components that directly and indirectly affect the design and development of quality online educational programs (Bates, 2000; Kearsley, 2000). A review of these four components will address such factors as the application of technology, adult learner characteristics, faculty members'

needs and demands on administrators. Issues surrounding the involvement of each of the four components are discussed and strategies are suggested from the research. Educators should be cognizant of all aspects of these components before designing online distance education. This literature review is significant for its application to nurse practitioner education as it moves to an online delivery format.

The third paper synthesizes the findings from the background study presented and the literature reviewed. An analysis of the literature reviewed and personal reflections as a faculty member in the PHC-NPP creates a complex network of factors for consideration in achieving the goal of quality online nurse practitioner education. Common threads emerge around each of the identified four components of online education that are synthesized into a typology of key determinants for consideration in the development and delivery of quality nurse practitioner programs. Examples have been supplied, in the form of checklists, within this typology that may prove beneficial in assisting novice online faculty in attending to the most critical factors which have been discussed throughout this folio.

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Paper #2: Foundations of Online Distance Program Development

Introduction: Rationale and Overview of Paper Folio

The purpose of this paper folio is to investigate significant components for online learning and their application to designing and delivering quality online distance nurse practitioner programs. These programs involve the education and training of experienced nurses for expansion of their role to include health assessment, diagnosis and clinical management of common health problems that had previously been the responsibility of physicians. A nurse practitioner functions outside the usual scope of practice of a nurse by incorporating some of the areas of responsibility which are normally considered to belong to medicine and pharmacy. For purposes of this paper, a nurse practitioner is "a Registered Nurse with advanced preparation in nursing and health sciences who practices within a primary health care model" (Association of Registered Nurses of Newfoundland and Labrador, 1998, p. 1).

Redesigning onsite educational programs for distance delivery has become a challenge for adult educators (Bates, 2000). Ongoing developments in computer technology are having one of the greatest impacts on this redesign. Like other fields of adult learning, nursing educators are facing the challenge of enhancing teaching and learning through the support of new computer technology, in particular the use of the web. The application of web-based courses within nursing education is a new endeavor in Newfoundland and Labrador. While stakeholders within nursing education in this province have long recognized the role of traditional distance education formats in the continuing education of registered nurses, they also recognize the significant role of an online format for learning.

The literature outlines a variety of advantages for adopting newer technologies for nursing education. Personal and work-related commitments and responsibilities often

impede experienced registered nurses who wish to enroll in traditional types of program. The opportunity to participate in online distance learning increases the accessibility of courses. Online education also provides increased flexibility of time and place that is important to experienced nurses in the province. Appropriate use of technological tools can be significant to the development of new psychomotor skills and in the assimilation of the new roles and responsibilities required of an advanced level of nursing practice. Technological abilities can assist in providing a supportive learning environment and a variety of strategies to enhance their learning. However, appropriate use of technology to meet the desired educational goals to graduate competent nurse practitioners requires that persons involved in the design and delivery of online educational programs should work collaboratively to ensure optimal online learning experiences (Bates, 1997, 2000; Ellis & Phelps, 2000).

I am a nurse practitioner and a faculty member in the Primary Health Care Nurse Practitioner Program at the Centre for Nursing Studies in St. John's, Newfoundland and Labrador. Having assumed new responsibilities in the development of the online nurse practitioner program, I am interested in contributing to the development and maintenance of quality education for nurse practitioners. I hope to achieve this goal through the completion of this paper folio. The folio consists of three significant activities: (1) reviewing the evolution of the nurse practitioner role and education within Newfoundland and Labrador; (2) researching the literature related to adult learning and online learning environments; and (3) applying literature and personal experiences in developing and delivering future online nurse practitioner education.

To accomplish these goals, I researched the following questions:

1. What is the role of a nurse practitioner?
2. Why is this role significant to the nursing profession and the health care system?
3. How significant is educational preparation of experienced nurses as they take on the role of the nurse practitioner?
4. What are the major factors that contribute to effective online distance programs?
5. What are the implications of these factors for online nurse practitioner faculty?

The first paper profiles nurse practitioner students in relation to their role, practice and education. It provides the background for understanding the needs of experienced nurses who are learning to work in an advanced practice role. The literature emphasizes the importance of being cognizant of adult learner characteristics when developing educational programs, regardless of delivery format (Bates, 1997; Caffarella, 1994; Knowles, 1973). Therefore, background knowledge of the specific learner population, nurse practitioners, is significant for the design and development of online programs. A brief overview of the nurse practitioner movement is presented to inform the reader that this movement is not a new phenomenon and not unique to Newfoundland and other parts of Canada. However, a resurgence of the nurse practitioner role in Canada makes it critical that nurse practitioners present themselves as competent practitioners to maintain acceptance and support for their place in a changing health care system.

Within the practice-based profession of nursing, a shift is occurring towards an online distance mode of learning that involves a learner-centered approach. This approach requires increased self-direction skills and assuming responsibility for one's own learning. This mode of delivery is still relatively new to nursing education in

Newfoundland and Labrador. The Primary Health Care Nurse Practitioner Program at the Centre for Nursing Studies is a pioneer in the field of distance online advanced education for nurses in this province.

This paper is relevant for nurses who wish to keep current regarding advancing roles within the nursing profession. Within the context of this paper folio, the first paper is particularly important to persons involved in the development and delivery of nurse practitioner programs. It provides a background for understanding the profile of learners and their educational needs for the determination of program goals to guide design and delivery. It also promotes the concept of quality educational programs for this relatively new advancing health care role and the uniqueness of online education for an area that has been governed by traditional pedagogical philosophy in the past.

The second paper is of interest to nursing educators who are new to online program design and delivery. It promotes the role of a variety of players in the program planning process and collaborative approaches to designing effective online programs. The development and delivery of nursing education programs have traditionally been the responsibility of program faculty and nursing education administrators. The collaboration of additional professionals, i.e. content experts, for nurse practitioner program development, is essential due to the expansion of knowledge and skills, some of which were formerly claimed by the domains of pharmacy and medicine.

As advances in communication and technology impact education, technology specialists are also demonstrating the importance of their role in the design and delivery of online programs (Bates, 1997). Bates (1997, 2000) discusses four significant components of online distance education: technology, learner, faculty, and

administration. The second paper presents a literature review of these four components of online education, concerns related to these components, and examples of strategies to facilitate optimum interaction and collaboration throughout program development and delivery process.

The third and final paper provides a synthesis of the literature reviewed for its practical application in the development and delivery of online distance nurse practitioner education. This paper is particularly significant for individuals who require guidance and reassurance in the development and delivery of online nurse practitioner education. A description of a case in which I was involved in the development and delivery process of its first online distance offering of the Primary Health Care Nurse Practitioner Program at the Centre for Nursing Studies is provided. My analysis of the significance of the four components during redesign and development of this program and reflection on the findings in the literature provides material from which to synthesize the most critical findings. Evolved from this synthesis was a framework for assessing the quality of programs – a typology of characteristics for online nurse practitioner faculty to consider. In particular, an application of the typology to faculty practice is provided to assist novice faculty members in their adjustment to the online teaching and learning environment. Because the typology includes factors that are generic to any participants involved in online program development and delivery, it may be adapted for use by learners, technology and administrators.

This paper folio supports the belief that quality online nurse practitioner programs are designed and delivered through the collaborative efforts of the four components discussed. All participants need to understand the nurse practitioner role and the

significance of maintaining quality education despite a move to an online distance delivery format.

Online programs can often include a number of technologies, in order to facilitate learning environments which are also referred to as distributed learning environments. Distributed learning is a term used to describe "the use of telecommunications to deliver synchronous and asynchronous instruction..." which includes "electronic media such as video conferencing, videotape, interactive television, electronic mail, and Web-based instruction" (Havice, Havice, & Isbell, 2000, p. 200). Throughout this paper, the terms "online", "Web-based", and "technology-based" are used synonymously in the context of a "distributed learning" environment. The terms "student" and "learner" are used interchangeably throughout the paper to refer to any individual who is undertaking a course of study. The term "Centre" is used in reference to the Centre for Nursing Studies.

Paper #1: Nurse Practitioner Role and Education

Introduction

Two initial activities in establishing a basis for program development are the acquisition of knowledge about the learner and the provision of the context for the design of the program (Caffarella, 1994). This paper will describe the nurse practitioner, discuss the role and traditional education of the nurse practitioner and the importance of maintaining established standards of education and practice in the light of a move to a technology based online distance delivery format. An understanding of the evolution and the significance of the role to an efficient, effective health care delivery system provides the context from which to understand the urgency for designing quality online programs to educate competent nurse practitioners. As key components in the design and delivery of online nurse practitioner education, this information is essential to faculty, administrators, technology design and support persons as well as nurses who are considering enrollment in a nurse practitioner program.

Nurse practitioners are a group of experienced registered nurses who have received additional education and training to prepare them to work in an expanded scope of practice which encompasses some of the domains of medicine and pharmacy. A brief history of the nurse practitioner movement is presented to establish the impetus for the changing role and the potential contribution to health care systems. An examination of the breadth and scope of the nurse practitioner role will assist the reader in developing an appreciation for the level of educational preparation required for safe, effective practice. A description of the Primary Health Care Nurse Practitioner Educational Program which

was offered at the Centre for Nursing Studies in St. John's, Newfoundland from 1997 to 2000, will serve as an example of traditional onsite nurse practitioner education.

Nursing: The Evolving Role and Educational Demands

Nursing as a profession is changing, yet the core concept of the nursing profession is still caring. The kind of caring required in the practice of nursing necessitates a holistic approach to patients and their problems (Leininger & Watson, 1990). The profession of nursing advocates a physical, psychological, social and spiritual approach to health (Association of Registered Nurse of Newfoundland and Labrador (ARNNL), 1995). The ARNNL (1995), in describing the scope of nursing practice, emphasizes how family, community and environment all influence the well being of each individual. As we enter the new millennium, the descriptions of family, community and environment are constantly changing due to global effects of advancing technology, changing economics, and altering lifestyle. Phenomena such as the overuse of antibiotics, the increase in stress-related illnesses, increased teenage violence, and the growing incidence of HIV and AIDS, are but a few of the realities of society which pose a grave threat to the physical and emotional health of all peoples. Nurses are challenged as health care providers to meet the health needs of individuals, families and communities.

Quality nursing care requires competency in the performance of psychomotor skills. In nursing education, the learning of psychomotor skills involves the acquisition of highly specialized motor skills to carry out complex medical procedures. The need for quality programs and maintenance of high standards of care is evident considering the complexity of patient care provided and the potential for harm that could occur. This responsibility has contributed to adherence to a more traditional style of nursing

education. The 'tried and true' onsite classroom lecture methods and laboratory practice has historically been the basis for the education of nurses. This enabled strict control of program content and diligent instruction, supervision and evaluation of student's clinical skills, contributing to high standards of graduating nurses.

Increased input of research and technology into health care delivery has contributed to higher educational standards necessary for the nurse to adapt and function in the changing work settings. Increasing workplace demands on nurses, a changing health care system and a changing society are contributing to the need for changes in the education of nurses (Canadian Nurses Association, 1999). Baccalaureate education and specialty training are quickly becoming the norm for nurses as they choose their specific areas of interest. The ARNNL Scope of Practice Document (1995) stresses the significance of life-long learning to critical thinking and the decision-making abilities required for enhanced performance of nurses in their chosen fields of expertise. These factors pose challenges to faculty and nursing programs when responding to the learning needs of all levels of nursing students.

The need for competent health care providers is especially apparent when we consider the advancement of practice into higher levels of responsibility and care for patients. The nurse practitioner student must learn to incorporate previous nursing knowledge with new theory and skills which require a reorientation to their clinical practice. This requires a major adaptation in thinking, learning and clinical practice. In the onsite Nurse Practitioner Program at the Centre for Nursing Studies, students learned through the traditional educational format which provided for content presentation via

lectures, and clinical instruction and supervision. The face-to-face contact with nurse practitioner educators also helped to socialize learners to this new role.

The education of these professionals is a daunting task when considering the scope of their roles in health promotion, illness and injury prevention, and supportive, curative and rehabilitative care (ARNNL, 1998). Nursing education involves more than the transference of knowledge and skills. Nurse educators act as teachers, mentors and evaluators. They also adopt the role of facilitator when encouraging self-learning and creativity in the learner. Due to the nature of the service provided by nurses, nursing educators have been cognizant of the responsibility for maintaining high standards of excellence in the tradition of 'caring' which embodies the profession. This paper considers the two-fold challenge to nursing education. The first is the preparation of nurses for new responsibilities outside their traditional scope of practice. Secondly, the task is made more complex by the challenge to prepare these nurse practitioners via a new medium of education while maintaining established standards.

Online education is a new learning mode for nurses who come from closely supervised basic education programs with stringent expectations regarding learner outcomes. The move to online delivery also causes major adjustments for novice online educators. Potempa (2001) referred to "the belief by some [educators] that technology is threatening the traditional way the business of education is defined and negotiated" (p.291). This may threaten the role of instructors in their control of students' learning and their ability to ensure student mastery of psychomotor skills, due to absence of face-to-face contact. Ward (1997) stated that " in nursing and many other practice-based disciplines, hands on experience can not be replaced, but the way in which it is provided

and the underlying knowledge gained are likely to change" (p.182). A greater reliance on self-directed learning which appears to be a characteristic of online education, has major implications for students, faculty and all those involved in program development and delivery as they adopt a new approach to nurse practitioner education.

Who is the Nurse Practitioner?

Nurse practitioners are one of the levels of advanced practice nurses. The Social Policy Statement of the American Nurses Association in 1995 (as cited in Hickey, Ouimette, & Venegoni, 2000) described advanced practice nurses as having "acquired the knowledge base and practice experience to prepare them for specialization, expansion and advancement in practice" (p. 34). The nurse practitioner role has also been referred to as an expanded role within the nursing profession. Mass (1995), as cited in Patterson (1997), stated that "expanded practice means that, in addition to providing nursing care, nurses perform functions that are within the legislated, or conventionally accepted, scope of practice of another profession" (p. 28). Physicians have traditionally performed the expanded role functions of nurse practitioners. Hickey et al. (2000) described the nurse practitioner as:

> an expert nurse clinician who conducts comprehensive health assessments, makes a diagnosis, prescribes pharmacological and nonpharmacological interventions, and evaluates outcomes in the direct management of individual patients with acute and chronic illness and disease... in a variety of settings. (p. 7)

Sheehy and McCarthy (1998) stated that the nurse practitioner is:

> focused on health and wellness in a community-based primary care setting, autonomy in clinical decision making, systematic and orderly collection of data

through history taking and the provision of feedback to the client, and advocacy on the client's behalf. The collaborative element of the nurse practitioner role affords not only an opportunity for consumer choice but also for effective resource allocation and follow-up. (p. 35)

These descriptions are also apparent in the following competencies of the Primary Health Care Nurse Practitioner as identified by the Association of Registered Nurses of Newfoundland and Labrador (1998): health promotion and injury and illness prevention, family health, community development and planning, health assessment and diagnosis, health care management, and autonomous and collaborative practice with other health care professionals.

Education of the Advanced Practice Nurse

Nurses have cared for families and communities in rural and isolated areas in Newfoundland and Labrador with limited or no assistance from physicians. Their duties have often involved tasks or responsibilities which were beyond their scope of education and practice. Often their education or training consisted of a form of apprenticeship involving the former onsite nurse or visiting physician. Advances in medical science and a desire for safer more effective health care practices necessitate increased knowledge and skills which are acquired through higher academic and clinical preparation. Outpost nursing programs and nurse practitioner programs have evolved to meet the needs of nurses who work as primary health care providers.

O'Flynn (1996) discussed a number of issues which are significant to the educational preparation of the advanced practice nurse. She stressed how a proactive approach by faculty "develops a cadre of advanced practice nurses who shape the

environment in which they practice" (O'Flynn, 1996, p. 432). Therefore, faculty must be visionary in creating change within the health care system and work to produce graduates who are also prepared to be change agents. "The loudest complaint heard from individuals completing their advanced practice nursing education is that they believe they do not know enough to take on the responsibilities and accountability of advanced practice" (O'Flynn, 1996, p. 432). Such expression from nurses confirms their acknowledgement of the need for comprehensive educational programs. In 1995, the American Association of Colleges of Nursing Task Force developed The Essentials of Masters Education for Advanced Practice Nurses. These recommendations included core courses in research and theory which prepare graduates to apply research and use information gathered in order to assess quality and cost-effectiveness of care. "The emphasis in advanced practice nursing education is shifting toward increasing the content areas in health policy, ethics, diversity, financing, organization, role development, and leadership" (O'Flynn, 1996, p. 433). These topics are critical to the curriculum if advance practice nurses are to become change agents within the community and influential contributors in our changing health care delivery system. O'Flynn (1996) also reminds us that "the knowledge of graduates from advanced practice programs may be obsolete three years hence" (p. 433). Therefore, with the vast potential of knowledge available and the speed of change, faculty and students must be flexible in their learning and practice and all must be committed to self-direction and life-long learning. Faculty also enhance creativity and a readiness for change within their students when learning environments provide "active participation, critical reflection, and a curriculum that reflects their focal learning needs" (O'Flynn, 1996, p. 435). Openness to change in education may lead to a

move towards shared learning experiences with other health professionals in order to promote understanding and appreciation of the role and scope of each other's practice. This approach to learning may have a positive effect on collaboration and an interdisciplinary approach to health care delivery (O'Flynn, 1996).

Historical Trends

An historical overview of nurse practitioner education and practice will reveal some of the issues relevant to the nurse practitioner movement today. This will alert the developer to the significance of quality education to prepare competent nurse practitioners who are prepared to meet the many challenges to be faced in establishing and maintaining this role. Though receiving acceptance from governments through legislation, the nurse practitioner role is not yet well established in health care delivery in Canada. A lack of understanding and opposition to expansion of nursing's role by other health care professionals has led to issues which are still being addressed, concerning territoriality, collegiality and collaboration, and nurse practitioner education. This provides additional rationale for stringent standards and policies to ensure program quality and competent practitioners.

The Nurse Practitioner Movement began in the United States in the 1960s. It began as a response to health care needs of the under-serviced poor and isolated communities. A shortage of primary care or family physicians also existed. Most of the nurse practitioner educational programs now require graduate level preparation or are incorporated into Master of Nursing Programs. In 2001, it was estimated that there were approximately 78,251 nurse practitioners in the United States (Pearson, 2001).

The reasons for the evolution of the nurse practitioner movement in the United Kingdom were similar to rationale in the United States. Hunter and Walsh (1999) identified the following factors as reasons for the increase in numbers of nurse practitioners in the United Kingdom, over the previous ten years: "A shrinking general practitioner population and growing numbers of patients unable to access mainstream services – office workers, members of ethnic minority groups and men" (p. 49). In the United Kingdom, controversy still exists within the profession and between nursing and medicine in relation to accountability, prescribing, education, and strict protocols which often restrict the nurse practitioner's role and practice (White, 1999). Hunter and Walsh (1999) stressed the significance of education in establishing the credibility and future development of the nurse practitioner role. They reported that educational preparation can vary "from in-house study days to graduate or post-graduate programmes" (p. 49).

The first program in Canada to educate nurses to work in remote, northern communities was established at Dalhousie University in Halifax, Nova Scotia, in 1967. In the early 1970s a number of programs began across Canada to prepare nurses to work in expanded roles, mainly in rural or northern environments. By 1983, nurse practitioner educational programs in Canada had been discontinued. There was a move away from advanced nurse practitioner programs to supporting the education of generalist nurses to balance societal needs of an aging population.

This was despite consumer acceptance of the role and cost effective, safe practice (Patterson, 1997). The Nurse Practitioner's Association of Ontario which was founded by the graduates of the early nurse practitioner programs in Ontario, continued to provide a network of support to nurses who continued to work in expanded or advanced roles as

nurse practitioners. This organization, in association with the College of Nurses of Ontario, was instrumental in the development of the Standards of Practice for Nurse Practitioners in Primary Health Care which was published in 1993 (Patterson, 1997). In 1995, Ontario reinstated a provincial primary care nurse practitioner program at a baccalaureate level. This new program was based on the newly developed Standards of Practice by the College of Nurses.

Newfoundland and Labrador has also played a part in the nurse practitioner movement. Two classes graduated from a Family Practice Nurse Education Program offered jointly by the Faculty of Medicine and the School of Nursing at Memorial University of Newfoundland in 1974 and 1975. The growing positive reports of nurse practitioner programs across Canada, recognition of the need for such a role in Newfoundland, and the offer of funding by Health and Welfare Canada's Health Research and Development Programs Directorate provided the support for the development and delivery of a Family Practice Nurse Practitioner Program in Newfoundland (Chambers, 1978). The educational program reflected the collaboration of the medical and nursing professions. Representatives from the Newfoundland Branch of the College of Family Physicians, the Newfoundland Medical Association, the Faculty of Medicine and the School of Nursing of Memorial University formed an advisory and planning committee to develop broad instructional guidelines and courses. Topics included family medicine skills review, current concepts in nursing, life cycle and common illnesses, therapeutics and nutrition. Additional courses in sociology and psychology were required for nurses without nursing degrees. Clinical experiences were obtained in the university family practice units, a children's hospital outpatient

department, homes for the aged and cottage hospitals. A nurse program coordinator, pharmacologist and family physicians conducted classes. Graduates were attached to primary care settings in rural Newfoundland under the supervision of a salaried physician and also to urban practices in St. John's or Corner Brook with fee-for-service physicians. An evaluation of six of the nurses in urban practice revealed high satisfaction and acceptance of the role by patients, physicians and allied health professionals, maintenance of patient care standards, and increased numbers of services provided to patients in four out of six of the practices (Chambers, 1978). In the abstract of his report, Chambers (1978) gives the following conclusion:

> Successful deployment of expanded role nurses in Newfoundland is dependent upon (1) the personal characteristics of the nurses and the physicians involved, (2) the existence of rural and urban primary care settings receptive to employing nurses in an expanding role, (3) mechanisms for paying physicians and nurses other than the fee-for-service method of payment which on the whole discourages physician delegation of tasks and allocation of time for teaching, and (4) an ongoing conviction that the expanded role nurses provide an array of additional services which are difficult to attach dollar values to and which outweigh any additional expenditures required to employ the nurse in such a role. (p. v)

These same issues still apply today and have implications for nurse practitioner education in regards to fostering collegial and collaborative attitudes, promotion of the role, and advocating health care policy and reform.

Recent Initiatives in Newfoundland and Labrador

A resurgence of the nurse practitioner role in Newfoundland and Labrador has occurred due to a combination of factors including a shortage of physicians in rural areas and the recognized need for reform in our health care delivery system. This renewal of the nurse practitioner movement comes in the wake of increasing concern over costs of our health care system. Chapter highlights of the Health Care in Canada 2002 Report of The Canadian Institute for Health Information (CIHI) (2002) stated that "Canada's health care spending is higher than ever before. It passed the $100 billion mark for the first time in 2001". The escalating cost of Medicare in Canada has created a crisis in health care delivery and a need for reform which has provided the opportunity for advancement of nursing roles within our health care delivery system (National Forum on Health, 1997; Romanow, R.J. 2002). Therefore it is critical that quality education programs are available to prepare competent nurse practitioners to meet the challenges involved in meeting the primary health care needs of Canadians. Some of the experiences from the development and delivery of the onsite Primary Health Care Nurse Practitioner Program at the Centre for Nursing Studies are described in order to provide knowledge of the challenges faced in this complex process.

The Need Identification

In 1995 the Association of Registered Nurses of Newfoundland and Labrador conducted a series of think tank sessions across the province of Newfoundland. Nurses and health care consumers discussed nursing's potential role within a health care system undergoing reform. The report entitled "Turning Visions Into Outcomes" identified the

need for Primary Health Care Resource Centres with nurse practitioners and other nurse specialists as the entry point to the health care system (ARNNL, 1996).

In May 1997 the Government of Newfoundland and Labrador convened a Provincial Health Forum to discuss issues critical to the improvement of the health care system. Forty representatives from the following groups participated in the forum: Newfoundland and Labrador Nurses Union (NLNU), Association of Registered Nurses of Newfoundland and Labrador (ARNNL), Newfoundland and Labrador Medical Association (NLMA), Association of Allied Health Professionals (AAHP), Newfoundland Association of Public Employees (NAPE), Canadian Union of Public Employees (CUPE), Memorial University of Newfoundland (Medical School), Medical Students, Professional Association of Interns and Residents of Newfoundland (PAIRN), Newfoundland Pharmaceutical Association, Newfoundland and Labrador Health Care Association (Health Boards), Consumers, Social Policy Committee, and Government Caucus Members (Provincial Health Forum, 1997). A major issue for discussion was a shortage of family physicians in rural areas and concerns regarding the health care available to rural communities. Recommendations from this forum espoused a collaborative, interdisciplinary approach to health care delivery. It was announced that three Multidisciplinary Service and Teaching Unit Pilot Projects would be located at Port aux Basques, Twillingate and Goose Bay. The purpose of these projects was the training and deployment of health professionals for rural settings. Nurse practitioners were designated for inclusion as members of these primary health care teams. In July 1997, the Minister of Health for Newfoundland and Labrador, Honourable Joan Marie Alyward, announced that the Centre for Nursing Studies was being given the mandate to develop

and offer a Nurse Practitioner Program in the fall of 1997. In 1998, legislation was also introduced into the House of Assembly to guide nurse practitioner practice.

Learner Profile

The admission requirements for acceptance into the nurse practitioner program were determined by the availability of a suitable applicant pool. In 1997 the Association of Registered Nurses of Newfoundland and Labrador (ARNNL) reported 5,511 registered nurses practicing in the province. This included all nurses prepared at all levels. Three-year diploma-prepared nurses were the largest group numbering 4,524. Baccalaureate degree prepared nurses numbered 874. Nurses with master's level education numbered 107. Six nurses were doctorate prepared (P. Raoul, Personal Communication, July, 2000).

The Provincial Government initially funded the Nurse Practitioner Program to educate nurses who would be prepared to return to rural areas to work safely and effectively in primary care settings. To ensure a commitment to these areas, it was believed that applicants should be first selected from areas where their roots were established and to which they would be willing to return. This factor and the fact that the majority of nurses in Newfoundland and Labrador are diploma-prepared nurses necessitated less stringent admission requirements than with many other programs in Canada and the United States. In order to ensure an appropriate applicant pool, minimum admission requirements included no less than two years of recent nursing experience and licensure as a registered nurse in the province of Newfoundland and Labrador. Most nurses admitted to the program since 1997 have not possessed a baccalaureate degree. However, they have possessed a variety of years of nursing experience, current clinical

expertise in diverse areas, and completion of significant post-graduate continuing education courses. Since the first graduating class, some nurses have completed the program and returned to long-term care facilities and psychiatric settings within hospitals in the St. John's area. A need appears to be emerging for nurses with nurse practitioner competencies in areas within institutions where medical residents and interns are in limited supply; for example, they have been employed within a cardiology program. This is a trend that has also occurred in the United States and Ontario.

Program Planning

A curriculum committee and a program advisory committee were established with representatives from the following stakeholder groups:

> Peninsula Health Care Corporation, Western Regional School of Nursing, Newfoundland and Labrador Medical Association, Department of Education, Health Labrador Corporation, Western Health Care Corporation, Department of Health, Central East Health Care Institutions Board, Newfoundland and Labrador Health Care Association, Association of Registered Nurses of Newfoundland and Labrador, Newfoundland and Labrador Nurses Union, Memorial University of Newfoundland Medical School, Memorial University School of Nursing, Newfoundland Pharmaceutical Association, Grenfell Regional Health Services, Central Regional Community Health Board and the Centre for Nursing Studies Nurse Practitioner Program. (CNS, 1999, 2000, p. 6)

Recommendations from these committees were incorporated into the course design and development. Program content and design received approval from both committees prior to implementation.

Program Development and Delivery

The nurse practitioner program faculty developed course and program objectives that served to guide faculty and inform students regarding expected learner outcomes. As an advanced practice nurse, the primary health care nurse practitioner functions in the roles of practitioner, educator and leader. A Nurse Practitioner Program Learner Handbook was developed which identified program objectives for each of these roles. These specific objectives reveal the comprehensive, holistic and collaborative nature of the nurse practitioner's role as it pertains to the health care of individuals, families and communities.

The Primary Health Care Nurse Practitioner Program was designed as a one-year certificate program which was divided into three semesters. The first semester was 15 weeks in length. Courses included Health Assessment, Pathophysiology, Pharmacology, and Roles and Issues. Lab and clinical elements focused on the development of history taking and physical assessment skills. The second semester included a distance correspondence course, Health Promotion with Communities, from Athabasca University. Advanced Clinical Decision Making I was delivered at the Centre for Nursing Studies. The theory component of this course involved the assessment, diagnosis and management of selected stable chronic, urgent and non-urgent problems commonly seen in primary care settings. The clinical component of this course focused on health assessment and clinical decision-making skills within guidelines established in the Primary Health Care Nurse Practitioner Regulations passed by the provincial legislature in June 1998. The third semester consisted of a 16-week clinical preceptored practicum, Advanced Clinical Decision Making II, at approved sites throughout the province.

Concurrently, students completed a second distance correspondence course from Athabasca University entitled Health Promotion with Families. The two university courses can be used as credit for students who later pursue a baccalaureate degree. The knowledge and skills acquired in the realm of family assessment and health promotion, and community assessment and intervention, are critical for nurse practitioners in order to fulfill their roles in providing care for families and in community development and planning.

From the inception of the program, the collaborative, multidisciplinary nature of nurse practitioner education has been evident due to the involvement of many stakeholders in its development and delivery. Specialists in family practice, community nursing, labor and delivery, and pharmacology have assisted faculty of the Nurse Practitioner Program in the delivery of course content. Family physicians, medical specialists, allied health personnel and specialty nurses have also assisted faculty in the clinical preparation of the nurse practitioner students in a variety of clinical settings.

Evaluation Process

Evaluation was an ongoing process occurring throughout the program and ending one year after student graduation. It included both student and course evaluations.

Student Evaluation

Student evaluation was an important aspect of this educational process. Knowledge was evaluated through written examinations in academic courses. Professionalism and written communication skills were assessed through scholarly papers and presentations in the Roles and Issues, Health Promotion in Communities and Health Promotion in Families courses. Health assessment skills, decision-making and clinical

management skills were tested using simulated patients in Observed Structured Clinical Examination (OSCE) formats. Students were also evaluated through observation with real patients in the clinical practicum of the third semester. Preceptor input was sought regarding student progress during clinical practicums. Students were also required to write a comprehensive examination and complete a final OSCE at the end of the final semester.

Course Evaluation

Course and program evaluation was considered an integral part of continuous improvement and maintenance of program standards. Written student feedback was sought at the completion of each course to determine effectiveness of content and delivery. Student exit interviews and written evaluations were completed at the end of the program and information obtained was considered in planning for the next class. One-year post-graduation surveys were conducted of patients cared for by graduates of the Nurse Practitioner Program. Results have been quite positive regarding satisfaction with care received. The program also underwent an examination of courses and policies and an assessment of students and faculty by an independent team of two expert evaluators in October 1999. Their report submitted to the Association of Registered Nurses of Newfoundland and Labrador resulted in approval status for the Primary Health Care Nurse Practitioner Program at the Centre for Nursing Studies.

The successful development of this nurse practitioner program is reflected in the standards achieved by its graduates and the satisfaction expressed by patients under their care. Therefore, it is critical that the transition to online program delivery maintains the same standards. This can only be achieved if all those involved in the process are

cognizant of the capabilities of technology for education and it's applicability to nurse practitioner program development and delivery.

Summary

This paper identified the challenge to nursing education of preparing nurses to meet the changing needs of individuals, families and communities within our health care system. It also identified the role and educational preparation required for the advancing role of nurses called nurse practitioners.

A brief history of the evolution of the nurse practitioner role reveals large numbers of nurse practitioners in the United States since the 1960's. Canada has been much slower in it's acceptance of this role despite research findings which have demonstrated patient satisfaction with the care provided by nurse practitioners and the financial benefits for our Medicare system. The education of competent nurse practitioners is paramount to the continued resurgence of the nurse practitioner movement in Canada.

A description of the development and delivery of the onsite Primary Health Care Nurse Practitioner Program at the Centre for Nursing Studies provided examples of the educational requirements for these advanced practice nurses in order for them to obtain the knowledge and skills necessary to provide safe, competent care. Collaboration of all stakeholders was significant for program development and for the facilitation and integration of the role into the health care system.

The current move to online education, while a response to learner demands for flexibility and accessibility, places additional challenges on nurse practitioner education.

If the potential for nurse practitioners in Canada's health care system is to be realized, it is critical that educators become knowledgeable facilitators of online education and recognize the significance of establishing and maintaining high standards of education and practice. Competent nurse practitioners from quality educational programs need to be accepted as reputable partners in the delivery of primary health care.

Paper #2: Foundations of Online Distance Program Development

Introduction

A number of factors are leading institutions to experiment with new computer technologies for online distance education. In the literature, four key components have been identified for their significance to the creation of quality online learning environments: technology, learners, faculty and administrators (Bates, 2000; Kearsley, 2000). This paper examines the literature related to these four components in order to assist in identifying best practices and policies for online nurse practitioner programs. Effective resolution of a number of issues related to these components is critical to effective functioning and integration of all aspects of a program. Findings and strategies from current research are presented to enlighten nurse practitioner program development and delivery.

Technology has an increased role in distance education, through the introduction of computers and telecommunications. It is the first component to be examined because it has major implications for educational programs and impacts all other components involved in the process of online teaching and learning. The most common technological methodologies utilized in distributed learning environments will be briefly introduced in an appendix for the benefit of persons unfamiliar with the application of technology. A review of the literature regarding use of the Web in distance education will help those involved in online program development to be cognizant of extent of use, capabilities and appropriateness of methods to types of learning. The following statement regarding advancing technology and education supports this:

> Given the rapid speed with which new technologies for teaching are infiltrating even the most cautious and conservative of universities, and the lack of experience in the use and management of such technologies, the case for researching and evaluating the applications of these new technologies is obvious" (Bates, 2000, p. 198).

Bates (1997) also reminds us that there is "a great deal to be learned about how to exploit fully the new technologies for teaching and learning" (p.16).

A review of the principles of adult learning and a variety of learning styles is conducted to promote an understanding of the needs and concerns of the nurse practitioner student, and to provide implications for online program design and delivery. This review serves as a critical reminder to those individuals involved in this process, who will also need to be diligent in addressing the additional learner needs due to geography and the lack of face-to-face contact in the online learning environment.

Research has been conducted surrounding the faculty/teacher's changing role to that of facilitator. This paper reports on concerns that arise due to the transition from traditional face-to-face classrooms to online distance learning environments. Faculty need to be aware of the changing demands and implications related to this new format of program delivery. Faculty awareness of the challenges and advantages may encourage their involvement in online programs and may also restrict participation to the most interested and committed faculty who are ready for the challenge of teaching online.

The role of the administrator becomes more complex with the introduction of online distance programs. Advancing technology is a new component in program development and introduces new issues to be resolved. Research has suggested strategies

that will be identified to help address the issues perceived by administrators of online distance programs. Awareness of the challenges can enhance administrative support for faculty efforts.

The purpose of this paper is to acquaint persons who are new to online learning with the issues surrounding the four identified components of online programs. Galbraith (1998) stressed the importance of understanding the process and methodologies:

> By acquiring greater understanding of the process of helping adults to learn and the methodologies that can enhance this process, teachers and their adult learners can increase their chances of sharing in a positive, meaningful, and developing educational experience (p. xv).

A review of the literature will provide relevant information concerning the technology, the learner, faculty and administration. This information obtained provides the basis for insights into the development and management of programs via online distance learning formats. The application of proven practices is critical to maintaining the standards and integrity of online nurse practitioner educational programs. A review of the literature is particularly important to individuals involved with online program development and delivery and who are new to this educational format.

Technology

Nurse educators are being challenged to learn a new mode of program design and delivery. This new learning medium necessitates an understanding of it's applications, advantages, and capabilities. Advances in technology and expanding capabilities within the field of education have made technology a key player in distance education delivery and in the growing trend towards distance education courses. Technology can prove to be

invaluable to an adult education program, but unfamiliarity with rapidly changing technology necessitates the inclusion of appropriate specialists, in order to ensure knowledgeable application of available tools (Bates 1997, 2000). This collaboration is very significant to novice online faculty. A discussion of advantages may also help to allay some of the fears that arise when reviewing issues surrounding the move to online education. Conscientious and diligent planning by informed developers who are cognizant of any potential problems will result in programs which are designed to best meet the needs of adult learners. The disadvantages or challenges posed by technology-based learning will be evident throughout the remaining sections of the paper as each of the other components involved in online education are discussed.

Advantages of Online Learning

Advantages of online course delivery are evident throughout the literature and impact on students and faculty. The transition from traditional classroom to online delivery of courses has increased the potential for student enrolment (Potempa, 2001). Increasing technologies have also expanded the methods and strategies available to enhance education via distance. Integration of Web technology with a more multimedia approach can utilize a greater variety of teaching strategies to meet the needs of diverse learner populations, and provide more flexibility to educators in customizing activities to meet individual learner's needs. This type of approach, referred to as "distributed learning", promotes active learning and collaboration with fellow learners, faculty and other content specialists through the use of a variety of communication tools. An online program with a distributed learning format can facilitate a learner-based approach which may be delivered in either synchronous or asynchronous environments, making it

compatible with the principles of adult learning in regards to flexibility, relevance and self-direction (Bates, 2000). The synchronous activities give learners the opportunity to communicate in real time. The asynchronous activities increase the flexibility of a program by providing the learner with the option of choosing their own time for study activity.

Despite any fears which may exist regarding loss of faculty control of the learning environment, Gibson and McHugh (2000) reported that " the evidence to date shows that learning for Internet courses equals and sometimes exceeds learning in the traditional classroom format" (p.31). Careful monitoring or tracking of learner online participation can assist in determining the degree of learner progression towards completion of objectives. Frequent monitoring activities by faculty can permit early intervention as problems become evident and therefore enable more effective facilitation of student learning.

Tools and Strategies

An understanding of the capabilities, strengths and weaknesses of a variety of tools and strategies is necessary for appropriate selection and utilization of technologies for distance education courses. This should help faculty to realize that the effectiveness of any tool is only as good as its significance in achieving the goals and objectives of the course.

An introduction to the most common tools and strategies available for use in distributed learning environments is beneficial to both learners and faculty. Kearsley (2000) describes some of the most common tools and applications of Web-based technology. E-mail, bulletin boards, forums, and chat rooms are used to facilitate two

way synchronous and asynchronous communications. Desk video and audio graphics are additional communication tools. These tools help to bridge the geographical gap between faculty and learners in online distance education programs. File transfer programs, online testing programs, software computer packages and computer simulations are support tools to assist faculty with efficient presentation of course content and assignments. Both communication and support tools aid students in their mastery of course content. These tools provide a variety of audio and visual learning resources which can aid student learning, enhance critical thinking abilities of students and assist in the evaluation of student learning. These tools are discussed in appendix A. All technologies when appropriately employed can help to engage students in the learning environment and bring them together as a class despite geographical barriers.

Appropriate Use of Online Technology

It is critical to consider the purpose of the introduction of technology into a learning environment. Educators are reminded of the importance of appropriate use of technology in learning (Bates, 2000). Bates suggested that learning is our goal and technology is merely the medium. Educators should be aware that appropriate use of Web technology is that which "(a) has an impact on student learning, (b) is relevant to explicitly stated learning outcomes, and (c) is matched to the types of learning desired" (Gandell, Weston, Finkelstein & Winer, 2000, p. 62). Therefore it is important that learners, faculty and administrators work together with technology specialists in an effort to design and deliver optimum online learner programs. A review of the impact and relevance of Web applications can help to prepare those who are new to online distance education.

Extent of Web Use

The extent of Web use refers to the impact it has on student learning. The impact is important to consider when contemplating the development of Web-based programs for distance adult learners. Gandell et al. (2000) looked at relevance and importance of Web use and described the following "five categories that represent a continuum of extent of use: minimal, supplemental, integral, central, and exclusive" (p. 62). 'Minimal' refers to use of the Web that is not relevant or necessary to learning goals and "therefore has no impact on student learning" (p.62). Use of the Web for non-course-specific learning, such as the posting of messages, outlines and assignments, is considered to be minimal usage because it is not directly related to achieving learning goals. When the use of the Web is relevant to meeting a few of the learning goals for the course, but not really necessary, so that it really doesn't have much impact on learning, it is considered to be 'supplemental' (p. 63). Downloading material and supplemental hot linked references fall into this category. Online discussions and quizzes directly related to comprehension of course content are relevant and impact on learner mastery of certain learning goals. This type of use is termed 'integral' (p. 63). 'Central' use of the Web indicates the required use of online databases and online group assignments where its use is very necessary and very relevant to meeting most of the learning goals of the course (p. 63). When the course is taught solely online, with no face-to-face contact, and computer and Internet access is very relevant and necessary for completion of all learning goals, use of the Web is described as 'exclusive' (p. 63). An understanding of the categories of Web use is important to the developers when assessing program or course content and determining

the appropriateness and extent of the use of the Web technology that is to be employed in the delivery of the program.

As a program's use of the Web technology becomes more meaningful to student's learning, the importance and relevance of this technology increases across the continuum from 'minimal' to 'exclusive'. Gandell et al (2000) cautions that "a professor with limited experience using technology may find it useful to begin using the Web in a minimal way and work toward using it in a more integral way, if this is appropriate for the learning goals of the course" (p.63). This can help to avoid the use of the Web technology because it is the current trend and help to ensure its use for achievement of student learning goals. Managing Web technology with the problems that can occur can add to the stress of the learning environment, especially if the student sees no real significant purpose for the use of technology. Servers can go down, for example, and access to material and interactions temporarily cease. The use of the medium should outweigh any inconvenience if students are to be satisfied to spend the time and effort online.

Web Capabilities and Types of Learning: A Connection

Program developers who wish to utilize Web technologies in program delivery need an understanding of the capabilities of this technology in order to know if and how it can help to meet the learning needs of their learner population. A number of writers emphasize the connection between the capabilities of the Web and it's correlation to different types of learning.

Bates (1997, 2000) offers a general discussion of aspects of the quality of Web based materials and their potential for student learning. Gibson and McHugh (2000) offer a broad discussion of Web technology and the connection to quality of student learning.

Gandell et al. (2000) offer a systematic typology of Web capabilities and suggest that if instruction is planned with these capabilities in mind, that specific types of learning will be better facilitated. They examined six features of the Web that can be used by faculty in their teaching: content presentation; searchable information; information exchange; guidance, practice and feedback; discussion; and simulations. The relevance of this typology for facilitating higher levels of thinking and learning was also discussed. A visual map to help educators understand the appropriateness of the various features of the Web for adult learning is provided.

Gandell et al. (2000) stated that as interactivity of the Web increases, the potential for higher levels of learning such as critical thinking also increases. Demands on time, effort and resources also increase with advanced levels of interactivity. This is important to remember when considering types of activities desired for students and when assessing faculty time available for participation in online activities and course maintenance. For example, "putting a course outline on the Web requires some front-end time and limited amounts of time for maintenance, but has little impact on explicitly stated learning outcomes" (Gandell et al., 2000, p. 67). A course outline is an example of 'content presentation' for 'knowing', and with minimal impact on learner outcomes, this activity may be described as 'minimal' use of the Web. Utilizing the Web mainly for this purpose offers little significance to student learning because of its limited impact on higher level thinking. In contrast, a considerable amount of faculty time is needed for the structuring, monitoring, and maintenance of online discussions which have "significant impact on learning when structured so that it is relevant to achieving course-learning goals"(p. 67). This increased interactivity through 'discussion' promotes 'thinking' and

'understanding', therefore demonstrating a more 'integral' use of the Web. The following statement by Gandell et al. (2000) is critical when planning the introduction of online educational programs: "In order to be worthwhile in terms of student learning, incorporation of the Web must be planned to capitalize on features that facilitate specific types of learning" (p. 61). Program planners and educators need to be cognizant of the appropriate selection of Web applications which will create a balance of learning through 'knowing', 'understanding', and 'thinking', in order to utilize the Web technology in a way that is relevant and that has a positive impact on student achievement of program goals.

Summary

The use of technology creates some obvious issues for distance programs. These issues include the need to assess the amount of technology introduced into distance programs, the types of learning desired, and the application of appropriate activities to create an effective balance of the various types of learning in order to maximize student achievement. Knowledge of these issues is particularly important when persons involved in the design and delivery of online programs are unfamiliar with technology. Examination of the use of technology reveals concerns that relate to the learners, faculty, and administrators. This helps to illustrate the interactive/integrative nature of online distance program design and delivery.

The Adult Learner

Who is the adult learner? According to Knowles (1973, 1984) prior to examination of any educational endeavour, it is critical for educators to determine who the learners are. The learners who are of particular interest throughout this paper folio are

all registered nurses who are either diploma or baccalaureate prepared. All successful applicants to the Nurse Practitioner Program at the Centre for Nursing Studies must have been practicing in their clinical specialties for a minimum of 2 years. It appears logical that if we, as educators, understand the principles of adult learning, then we can be more effective as facilitators of this process. This is true in the traditional classroom setting but more so in an online learning environment, where unfamiliar variables exist which pose challenges for the adjustment of adult learners and faculty.

Theories of Adult Learning

A variety of theories exist which offer different perspectives on the complex issue of adult learning. The theories under review were not designed with the online learner in mind. However, the principles remain the same whatever the setting or methodologies employed to facilitate the learning. The learner is the constant, whereas the learning environment and its effect on learners are changing with the advent of advancing technology. The educator's knowledge of the characteristics of the adult learner and the principles of adult learning should help him/her to assist the student to adjust to any learning format. MacKeracher (1996) stated that "The more we know about the basic processes of learning and the unique strategies used by individual learners to carry out learning activities, the more effectively we can design appropriate activities and resources to facilitate that learning" (p. 3).

Knowles's Andragogical Theory

Knowles (1973) is known for his theory of andragogy that is based on characteristics of the adult learner. He described the differences between an 'andragogical' or adult learning model and a 'pedagogical' or child model for learning.

Knowles (1973) espoused a number of assumptions about the characteristics of adult learners which he advocated to guide the development of adult learning programs. He stated that an adult:

> has a deep psychological need to be perceived by others as being self-directing... accumulates an expanding reservoir of experience that causes him to become an increasingly rich resource for learning, and at the same time provides him with a broadening base to which to relate new learning's... is ready to learn those things he 'needs' to because of the developmental phases he approaches in various roles... has a problem-centered orientation to learning (p. 45-47).

Lewis (2000) supported this theory when he wrote that the central theme for adult learning "is that the student is a capable decision maker and is an active participant rather than a passive recipient in the teaching-learning process" (p. 9). When nurses return to study "they respond extremely well to a program that is 'andragogical' rather than 'pedagogical' (Lewis, 2000, p. 8). As educated, experienced professionals, they feel that they have contributions to make to the learning environment and feel that they know what they need to achieve from post graduate study, in order to enhance their knowledge and work performance. It is important that faculty be cognizant that an unfamiliar learning environment, like that of an online education program, may pose additional stress on normally confident individuals, due to feelings of loss of control and resulting vulnerability. This increased stress on learners may pose problems with learner adjustment and progress within an online program. These factors also have implications for faculty in their roles as instructors/facilitators and advisors to students enrolled in online programs.

Cross's Characteristics of Adult Learners

The characteristics of adults as learners model (CAL Model), put forth by Cross (1981), looked at personal and situational characteristics. "Personal characteristics include physical, psychological, and sociocultural dimensions... Situational characteristics focus on variables unique to adult participants – for example, part-time versus full-time learning and voluntary versus compulsory participation" (Merriam & Caffarella, 1991, p. 252). This model does not describe how these variables interact and their effect on learning. However, it does make us aware that many internal and external variables can impact on the adult, as he/she becomes a participant in a learning activity. Unfamiliarity with technology, equipment costs and a sense of isolation may pose additional variables which can affect learning ability.

McClusky's Theory of Margin

Merriam and Caffarella (1991) reviewed McClusky's theory of margin which discussed when learning is most likely to occur. In reviewing his theory, they described adult learning as a situation which can exist when an adult is able to maintain "balance between the amount of energy needed and the amount available" (p. 253). McClusky (1970) stated that, "a necessary condition for learning is access to and/or the activation of a Margin of Power that may be available for application to the processes which the learning situation requires" (cited in Merriam & Caffarella, 1991, p. 254). Additional energy needed to expend on acquiring new technological skills and manipulating through the Web program may upset this Margin of Power and have a negative impact on the amount and quality of learner outcomes. This has implications for those involved in the

development and delivery of online programs, in insuring that the programs are user friendly and provide sufficient student support.

Knox's Proficiency Theory

Knox's (1980) proficiency theory also examined adult learning in relation to an adult's life situation. Merriam and Caffarella (1991) described this model of learning as containing "the following interactive elements: the general environment, past and current characteristics, performance, aspiration, self, discrepancies, specific environments, learning activity, and the teacher's role" (p. 255). The potential influence of these elements on learning and performance is stressed by Knox (1980) as he defines proficiency as "the capacity to perform satisfactorily if given the opportunity" (cited in Merriam & Caffarella, 1991, p. 255). In order to perform satisfactorily, the learner must be able to effectively manage the new technology in a distributed learning environment. This implies the need for a very flexible, supportive environment.

Jarvis's Model of Adult Learning

Jarvis (1987) model of adult learning looked at learning as another "social situation in which a potential learning experience occurs" (cited in Merriam & Caffarella, 1991, p. 256). This statement raises concerns regarding the potential for feelings of isolation in distance education and the emphasis on the role of communication in online learning programs. Jarvis identified nine responses to experience for learning to occur within the responses. He also examined different types of learning. 'Presumption', 'nonconsideration' and 'rejection' were identified as non-learning responses. 'Preconscious', 'practice' and 'memorization' responses were identified as non-reflective learning. 'Contemplation', 'reflective practice' and 'experimental learning' represented

reflective learning. "Contemplation is thinking about what is being learned and does not require a behavioral outcome; reflective practice is akin to problem solving; experimental learning is the result of a person experimenting upon the environment" (Merriam & Caffarella, 1991, p. 256). Jarvis (1987) described these last three responses as the "higher forms of learning" (cited in Merriam & Caffarella, 1991, p. 256).

Merriam and Caffarella's Theory Analysis

Merriam and Caffarella (1991), following their review of existing adult learning theories, determined that no one theory alone could explain the complex nature of adult learning. These writers concluded that:

> At least four elements of adult learning can be extracted from these theories: (1) self-direction or autonomy as a characteristic or goal of adult learning; (2) breadth and depth of life experiences as content or triggers to learning; (3) reflection or self-conscious monitoring of changes taking place; and (4) action or some other expression of the learning that has occurred. (Merriam & Caffarella, 1991, p. 264)

A significant factor which is evident in the learning environment of an adult is that adults differ from children because "they have assumed responsibility for managing their own lives" (p. 303). Adults seek some control over decision-making and are motivated to learn due to numerous life experiences and situations. Adults also look at rationale for their actions including participation and relevance of learning activities. "Learning in adulthood is characterized by its usefulness for immediate application to the duties and responsibilities inherent in the adult roles" (p. 304). As adult learners, nurse practitioner students have the responsibility of managing their personal, family and professional lives.

They bring many personal and professional experiences to the learning environment. Their learning experiences are intended to enhance their professional development. Time commitments and restraints create the need for good time management. The content and medium of study must be viewed by the student as relevant and appropriate for meeting their learning needs in order to warrant the utilization of their time and resources. Keeping courses current and displaying relevance of content will be demanding of faculty, administrators and technological resources. Their acceptance of the online distance format is also critical to their future practice, as computer and Internet technology becomes a more prominent resource to the health care system.

Learning Styles

A brief introduction to a variety of learning styles will hopefully remind the educator of the individuality of every learner and resulting implications as we design courses for online delivery. Each individual has a preferred learning style which is generalizable to any learning experience, whether in a traditional classroom setting or online distance format. A number of researchers define and describe learning styles.

MacKeracher (1996) gave a broad definition of learning style to include "not only cognitive style, but also affective, social and physiological styles of responding to learning tasks or learning environments" (p. 197). According to MacKeracher (1996) all groups are heterogeneous because each individual has a complex mixture of personal preferences for learning, personal traits and levels of ability.

Bradshaw (2001) in discussing the field dependent–field independent cognitive style of learning, described the field dependent individuals as people-oriented, externally

motivated persons who prefer to be 'taught'. Research findings by Jonassen and Grabowski (1993) revealed that field dependent learners:

> like group-oriented and collaborative learning, prefer clear structure and organization of material, attend to the social elements of the environment, respond well to external reinforcers, [and] prefer external guidance (cited in Knowles , Holton and Swanson, 1998, p. 160).

Bradshaw (2001) described the field independent individual as a more analytical, task-focused person who prefers to be more independent in learning activities. Jonassen's and Grabowski's (1993) research also revealed that field independent learners:

> like problem solving, prefer situations in which they have to figure out the underlying organization of information (for example, outlining), like transferring knowledge to novel situations, prefer independent, contract-oriented learning environments, [and] respond well to inquiry and discovery learning (cited in Knowles, et al., 1998, p.160).

"Both the field dependent persons and the field independent persons are capable of solving the same problems, but each approaches them differently because they perceive them differently (MacKeracher, 1996). It is important, however, for us to remember that "people possess the capacity for both styles" (Bradshaw, 2001, p. 5).

Kolb's (1984) learning style model described four types of learning behaviours. The 'converger' prefers abstract concepts, active experimentation and works better with objects than people. The 'diverger' prefers concrete experiences, is imaginative, emotional and looks at the whole picture. The 'assimilator' prefers abstract concepts, and

is reflective and theoretical. The 'accommodator' prefers concrete experiences, is intuitive, takes risks, solves problems by trial and error and adapts to new circumstances.

Comprehension of the complexity of learning styles can give us the basis for tolerance and acceptance of variations in individual student performance. Assessment tools exist which can assist faculty in the identification of individual student learning styles. Knowledge of individual learning styles can also help in the diagnosing of problems students may be having in achieving learning objectives. This may help in planning appropriate methods of remediation for students experiencing difficulties. Learning can also be enhanced by the utilization of a number of technological tools and learning activities that will accommodate a variety of learning styles.

Learner Needs for Online Programs

Online delivery of courses is relatively new to nursing education in Canada. Therefore, the experience of learning via the Web is a new phenomenon to most nurses, who are re-entering the education system. Mueller and Billings (2000) reported the common problems of online students to be "student satisfaction levels, frustration with technology, feelings of isolation and perception of increased time spent on course work" (p. 79).

Ingredients for Success

Knowledge of the program and its expectations can be a student's key to overcoming common problems and improving his/her chances for success. Schlossberg (1984) developed a transition theory which "facilitates understanding of adult students in transition by providing insight into factors related to the transition to a new way of learning and use of technology" (cited in Mueller & Billings, 2000, p. 65). He identified

four areas that "influence students' ability to cope with transition related to higher education: situation, self, support and strategies" (cited in Mueller & Billings., 2000, p. 65). Learners need to be well informed about the 'situation', prior to enrolling in the course. They need to be aware of the demands of distance education, technology requirements and specific program requirements. An awareness of 'self ', in regards to readiness and ability to undertake new learning, can also help to determine chances for success. Mueller and Billings (2000) identified the following strategy to assist learners to determine their readiness to study online:

> Some schools use a learner assessment, posted on the school Web site which perspective students can use to determine if they have the technical skills (particularly computer literacy), educational background, readiness for the self-directed learning and independence needed for success in DE courses, family and employer support, and the time required for the course. (p. 67)

The self-study and interaction online which is necessary in a Web-based distance program demands much time and commitment on behalf of students as well as instructors (Kearsley, 2000; Mann 2000). An understanding of these factors is important to the learner's completion of the program. Learner who "possess initiative and self-discipline to study and complete assignments" is more likely to do well with online courses (Kearsley, 2000, p. 62). "Online courses often experience high attrition and dropout rates" (Kearsley, 2000, p. 62). This has been attributed to factors such as poor time management, poor learning skills, inadequate computer technology abilities, lack of motivation, and poor communication skills (Kearlsey, 2000, p. 64). The problems identified also verify that students need appropriate supports and strategies to enhance

their success. Faculty also play a role in facilitation of student recognition and coping with the four areas identified by Schlossberg (1984). Sufficient faculty and learner attention to the four areas outlined by Schlossberg (situation, self, support and strategies) may help to alleviate the factors that contribute to attrition and thereby enhance learner success. Mueller and Billings (2000) stated that high levels of "technical, academic, personal, and career support" on the part of the educational institution resulted in "increased student satisfaction and increased student retention" (p. 79). Program support involves flexibility and sensitivity when determining policies.

Participant Interactivity

Research reveals a number of student concerns regarding online education programs. McAlpine, Locherie, Ramsay and Beaman (2002) completed a study of a Web-based graduate level nursing ethics course in which the course content was facilitated exclusively online.

Humour and a positive attitude were strategies used to reduce student anxiety with technological difficulties with the Web. Students reported satisfaction with the flexibility of an asynchronous approach to course work and comfort with more time for reflection prior to posting comments as opposed to intimidation of speaking out in the face-to-face classroom. Loss of human sight and voice contact was difficult for some students but they still rated the course positively (McAlpine et al., 2002, p. 7). McAlpine et al. (2002) recommended that "maximizing Web-based interaction to simulate human contact" through posting pictures and incorporating social chat activities would be helpful humanizing techniques (p. 17).

Video conferencing, toll-free telephone numbers, chat rooms and cameras attached to computer software can help to decrease any feelings of isolation and enhance socialization of the learners. Frequent e-mail communication, along with prompt feedback from assignments, not only assists learners in meeting program goals but also helps to reduce isolation.

The desire for interaction and a wide variety of communication tools for online programs gives support to a case-based approach to learning. This approach represents a methodology for learning which is congruent with the development of the level of creativity and decision making abilities desirable of nurses in advanced practice roles. Zwirn (1998) stated that "The shift from content-centered presentations to shared quests between students and faculty to use existing information to answer questions and solve problems will facilitate modeling, foster creativity, and enhance active collaborative learning" (p. 328). This was confirmed in the study by McAlpine et al. (2002), who found that "The weekly e-mail discussions generated data that indicated higher cognitive skills, such as critical thinking and decision-making" (p.17).

Gender

A gender issue related to family support was noted by VonPrummer (1994), who reported that generally "women enrolled in education placed greater emphasis on their family roles which created role and time conflicts: whereas, male students reported no role conflicts and mentioned being relieved of family duties and given uninterrupted time and space for studying" (cited in Mueller & Billings, 2000, p. 81). This gender related role conflict may be a significant problem in an adult learner population, who represent the female dominated nursing profession.

Learner as Consumer

Due to the high costs of returning to studies, in terms of personal and family resources, the adult learner needs to be a wise consumer when considering program options. When contemplating participation in a program delivered in a new format, it is even more important that "the nurse consumer of the educational course or program also has the responsibility to be a savvy and literate consumer of this rapidly evolving medium" (Ali, Hodson-Carlton & Ryan, 2002, p. 33). Ali, et al (2002) evaluated the experiences of the delivery of Web-based instruction at the Ball State University, School of Nursing in Indiana.

Ali et al. (2002) developed a consumer's guide to the selection of Web-based instruction that could be used by students in any Web based course (Appendix B). The guide urges the learner to assess the level of support in relation to technology and computer literacy, resources and technical support, completion time, student retention history and presence of a common Web support area for students. Curriculum and instruction should be assessed for quality, feedback, content, framework and clinical requirements. Faculty should be assessed for their role and qualifications. It was also advised that the institution should be assessed for commitment, infrastructure and accreditation. Finally, the consumer guide recommends that the program should be examined based on the evaluation of the level of satisfaction of students and employers, the retention rate and certification pass rate, and the appropriate utilization of quality assurance methods to ensure program standards and outcomes (Ali et al., 2002, p. 37). This guide may also be used by program developers to serve as a basis for the development of program evaluation policies.

Learner Preferences

A limited number of studies have been conducted in Canada to assess student likes and dislikes regarding distance delivery methods. Two pertinent studies were conducted on an Ontario distance education program for nurse practitioners which used a variety of technological media for delivery.

Cragg, Andrusyszyn and Humbert (1999) in examining learner preferences for delivery methods discovered a significant preference for paper-based materials. A large number of the respondents reported that they made hard copies of materials from computer conferences and taped lectures and teleconferences to best suit their learning styles. CD-ROM and video conferencing were the most highly rated technological methods. Many participants reported that interaction was difficult during audio-teleconferences due to the large number of students and insufficient time for all to have input. They liked the flexibility of study time and place and voiced satisfaction with the face-to-face meetings which were preferred for learning skills and meeting people. Students expressed frustration with computers due to time factors, lack of experience and lack of technical support at home.

The researchers reported that a "stronger correlation [was] found between lack of technical difficulties and preferences for delivery methods than between learning style and preferences" (Cragg et al., 1999, p. 11). Researchers felt that the preferences for printed materials and the CD-ROM may have been due to technical difficulties experienced. "However, the students' frequent choice of other delivery methods demonstrates that there is value in choosing methods that are a good match with desired

outcomes" (Cragg et al., 1999, p. 12). Therefore, diligence is needed in the selection of appropriate methods that may also pose fewer technological difficulties.

A two year study of perceptions and satisfaction with delivery methods was conducted involving students, professors and tutors of this same nurse practitioner program in Ontario (Andrusyszyn, Van Soeren, Laschinger, Goldenberg & DiCenso, 1999). All participants highly preferred face-to-face delivery. Teleconferences were declared more appropriate for information dissemination given the large numbers of participants and reduced opportunity for interaction. Technology was a burden to some students due to lack of experience and "the rigors of an already intensive program" (Andrusyszyn et al., 1999, p. 29). The researchers stated that "creating ways for distance learners to interact with each other and with faculty, albeit through technology, is a fundamental element to successful distance program design and learning" (p. 29). The need is clear for training and support in the use of the technologies for all learners and faculty. The research report also stressed the need to address "the nature of the learner, the educator, and the content, as well as the fit between content and delivery methods" (p. 32).

Summary

The literature has identified many of the issues regarding student participation in a technologically based learning environment. Many of these issues are evident in any educational program but may pose greater challenges in mainly online distance learning environments. Understanding of the principles of adult learning and learning styles can help the program developers in the selection of technological applications which best suit the needs of the adult learner. A summary of the issues surrounding the online distance

adult learner includes relevant content, time and commitment, sense of belonging, flexibility, readiness, level of ability, support (psychological, financial and technological), provision of a variety of presentation methods, need for self-direction, need for good communication skills, effect of previous experiences, level of satisfaction and gender. All these factors are complex variables that impact on adult online learning experiences. Faculty, program administrators and designers can have positive or negative influences on student learning through their policy making and design decisions. Therefore examination of the learner component demonstrates the importance of an integrative approach to online education which includes interaction of faculty, administrators and technology in maintaining quality program design and delivery.

Faculty Perspective

Advances in technology are increasing the opportunities for distance learning. Therefore, if nursing education is to keep up with growing trends in education, "Nursing educators must make the commitment to use electronic learning environments in nursing curricula to prepare future nurses" (Moore & Kelley, 2000, p.51).

The distance and technology will pose new challenges and require new approaches to old issues. A look at some of the needs and concerns of faculty may help to prepare novice online educators as they embark on this new delivery format. To alleviate faculty fears and encourage their participation, it may be beneficial to review the rationale of current online faculty, in regards to their involvement in distance online education and the strategies that they suggest to enhance the process. Faculty readiness to embrace technology is critical to the delivery of online programs.

Role of Adult Educator in Online Programs

Kearsley (2000) stated that, "the most important role of the instructor in online classes is to ensure a high degree of interactivity and participation" (p. 78). An engagement model of teaching, emphasizing meaningful and realistic course work, is critical to enhancing levels of participation. Kearsley (2000) encouraged the use of threaded discussion forums, peer evaluation activities and team assignments. He also stated that "a critical rule of good online teaching is that the instructor must participate a lot to get students to do likewise" (p. 80). Prompt feedback and ongoing individual and group communication helps to decrease isolation and enhances students' feelings of belonging. These activities obviously contribute to the high workload reported by faculty. Kearsley (2000) suggested the following strategies to help to reduce workload: peer evaluation, group feedback, experienced online teaching assistants and online multiple choice or short answer tests.

The online mode of teaching requires a reorientation of teacher strategies. "The effectiveness of online instructors is a function of their experience with online teaching, mastery of the online environment, and overall teaching skills" (Kearsley, 2000, p. 91). Kearsley (2000) also described how the teacher is transformed into a moderator and facilitator. The moderator encourages "the student to participate in discussion forums and conferences, ensuring that certain students don't dominate, keeping discussions focused on the topic at hand, bringing out multiple perspectives, and summarizing/synthesizing the highlights of discussions" (p. 84). Kearsley (2000) stated that the facilitator provides "information that will help students complete their assignments, suggesting ideas or strategies for them to pursue in their course work, and getting students to reflect on their

responses and work" (p. 84). Students must study and acquire information more independently online. This requires more one-on-one follow up of individual progress to facilitate learning.

Kearsley (2000) discussed the significance of student tracking. When evaluating performance, the student's grades are important but analysis of the pattern and history of participation in the course should also be assessed. Attention to participation and student progress through course activities, as well as test scores can provide valuable information concerning comprehension of material, student learning and learning styles. A record of consistent participation, with a less than satisfactory level of performance may be a red flag to faculty, in determining those students who require assistance in achieving certain course objectives.

Picciano (2001) states that some traditional classroom techniques may be difficult or impossible to adapt to a distance mode. The monitoring or tracking previously discussed can assist faculty to identify course content that students have difficulty comprehending through the strategies employed within the Web technology. The conscientious online instructor will spend extra time tutoring or mentoring those students experiencing difficulties with course work. All those individuals responsible for program design and delivery should be alert to the content which may cause difficulties for some or all of the learners. Faculty need to work collaboratively with administrators, designers and technologists to determine efficient and effective ways to address these concerns during the early stages of program development and to incorporate possible solutions into the design of the program. This may involve use of strategies such as teleconferences,

videoconferences, videotapes, computer simulations, offsite tutors or occasional on site sessions.

The role of faculty in online distance programs involves considerable time online due to moderating of discussions, tracking students, providing feedback and facilitating students' understanding of course content. In nurse practitioner education this also involves assisting students to become proficient in the performance of new clinical skills performed on sick and injured clients. This practical clinical component creates challenges to nurse practitioner faculty in online distance programs.

Time and Commitment

Allocation of time is a challenge shared by both faculty and learners as participants in an online nurse practitioner program. Instructors unfamiliar with technology must spend considerable time to become knowledgeable and competent in this area in order to "adapt their instructional techniques and materials to take advantage of distance learning opportunities and to minimize the impact of a remote teaching environment" (McAlister, Rivera & Hallam, 2001, p. 2). Research has confirmed the increased time required for faculty learning new technology and adaptation to online delivery (Care & Scanlan, 2001; McKenzie, Mims, Bennett & Waugh, 2000; Rockwell, Schauer, Fritz & Marx, 1999).

Wilson (1998) conducted a survey of thirty-one instructors teaching online courses in a variety of disciplines within 15 south-eastern states. The type of institution varied. All comprised a consortium called The Southern Regional Education Board. The major concern of sixty-eight percent of the faculty was sufficient time to develop and

maintain course material. "Fifty-eight percent of the instructors surveyed received release time or financial incentive for developing the course" (Wilson, 1998, p. 5).

Recognition and incentives such as flexible working hours, release time, helpful support services, user friendly software, appropriate assistance, reward systems and ongoing training have been suggested to help enhance faculty commitment to online program development and design (McKenzie et al., 2000; Rockwell et al., 1999). It has been acknowledged that "Research on adapting teaching strategies for distance delivery is needed to enhance understanding of workload adjustment issues along with assistance and support needs" (Rockwell et al., 1999, p. 7).

Program Appeal

Ensuring that the program is appealing to learners is an important responsibility for faculty. Knowledge of factors that contribute to dissatisfaction or motivation may help the faculty to provide an environment that is conducive to learning and enhances student success in the program. A review of Chyung's (2001) study will identify some of these elements.

Student Dissatisfaction

Chyung (2001) reported the results of exit interviews carried out with students who dropped out of an online master's degree program at Boise State University from 1989 to 1996. "Online students' satisfaction levels during the first or second online courses were one of the major factors that determined their decision to continue or not to continue with the online program" (Chyung, 2001, p. 5). Chyung (2001) revealed the following specific reasons for dissatisfaction:

> discrepancies between their professional or personal interests and the curriculum or the course structure, low confidence levels in learning via the internet (without face-to-face human contact), incompetence in using the online communication software as an effective learning tool, [and] feelings of being overwhelmed by advanced knowledge and overloaded information online. (p. 5)

These are factors which must be addressed by faculty throughout course development and delivery.

Student Motivation

Chyung (2001) linked the above reasons for dissatisfaction with John Keller's ARCS Model which discussed the influence of the following four factors on the degree of motivation to learn: Attention (interest), Relevance, Confidence and Satisfaction. These factors suggest implications for online programs "to improve the motivational appeal of the online instruction and help online learners feel satisfied with their online instruction and their performance in online classes" (Chyung, 2001, p. 7).

Strategies were developed for the redesign of the Instructional and Performance Technology Master's online degree program at Boise State University, in an attempt to enhance adult learner motivation and to reduce a high dropout rate. Chyung (2001) formulated 21 specific strategies to address Keller's four factors. Some of the strategies identified which were initiated to target the four factors mentioned above included: the need for small classes, individual student monitoring, private feedback, technical support, offering choice of assignments, clear guidelines for students, prior learning assessment, attention to a variety of learning styles, variety in multimedia instruction and interactivity

of participants. Evaluation of the interventions since their introduction in 1997, revealed that:

> Improvement of the motivational appeal of online instruction for adult learners has significantly positive effects on three levels of the instructional system: (a) learners' perceptions toward the online learning environment; (b) learning outcomes; and (c) increased retention rate. (Chyung, 2001, p. 1)

Motivation is a required element for the time and commitment necessary for program completion and achievement of high standards and program goals. Therefore, it becomes a critical element in the role of an adult educator in an online distance program.

Faculty Participation: Reasons and Reactions

McKenzie, Mims, Bennett and Waugh (2000) conducted a study of the concerns and practices of sixty-six online instructors at the State University of West Georgia. The following is a ranking of reasons why faculty choose to teach online courses, with the first response being the most frequent:

1. Desire to get students more involved with technology.
2. Opportunity to use technology more innovatively to enhance course quality.
3. Opportunity to meet needs of students at a distance.
4. Increased flexibility in working hours and location.
5. Response to students asking for online educational opportunities.
6. Chance to interact with students more frequently.
7. The course was required to be an online course. (McKenzie et al., 2000, p. 3)

Faculty reported receiving from 0 to 21 hours of instruction before teaching their first course. The majority of the respondents spent more time preparing and delivering

WebCT courses than their traditional courses. Fifty-two percent of faculty spent 1-3 hours per week interacting with students online using WebCT, with some spending as much as 13-15 hours. An ideal online class size of 10-15 students was recommended. Ninety-six point seven percent of faculty stated that face-to-face meetings in contrast to online communication were helpful for interaction, questions, presentations, exams, course and technical orientations, and submission of reports. Forty percent of faculty had taught the same course both face-to-face and on-line. Approximately twenty-five of this group preferred a combination of both face-to-face and on-line instruction. This was followed by a preference for face-to-face instruction. "Total online instruction was the least preferred by this group of faculty members" (p. 6). Faculty suggestions to the University in order to assist them in the delivery of online courses reflected the need for small classes, ongoing technological training for faculty and students, support (faculty release time, incentives and mentors for novice faculty) and user friendly programs. McKenzie et al. (2000) recommended that "administrators need to determine what factors encourage faculty to adopt online instruction, and what kinds of support faculty require to design and implement online delivery" (p.7). They further state that faculty who have not participated in Web delivery need to be made aware of the time and resources needed to successfully design and implement online courses.

Faculty who are new to this mode of delivery may not always be eager to embrace technology due to many of the concerns discussed throughout this paper. However, "faculty who remain open to change, and administrators who anticipate and support what forms education might take in an age rich in instructional media (especially electronic

information), will find themselves sometimes anxious, many times challenged and always growing" (Zwirn, 1998, p. 328).

Summary

Faculty are faced with a variety of issues through their participation with online teaching. Time and commitment, increased workload and increased computer skills are major issues for teachers who are new to technological educational formats. These issues have implications for administrators in regards to flexibility of working hours, ongoing support services and training, if faculty members are to be motivated to teach in online programs.

Issues also arise when teaching students at a distance regarding student engagement and progress. Increased interactivity is encouraged to facilitate student learning online. The literature has also indicated the significance of attention to program retention rates and achievement of student and program goals. The diverse nature of a group of adult learners has implications for educators, in relation to creativity in planning student assignments and flexibility of expectations due to the variety of learning styles and preferences of these learners. All these issues have implications for the teacher's role in the development and delivery of quality online programs.

Administration

As the face of education changes, management of the programs must also adjust to meet new challenges. These challenges have implications for administrators in order to create and deliver effective online programs.

Administrative Perspective

Husmann and Miller (2001) conducted a survey of 26 distance education administrators consisting of three rounds of questions "about their perceptions of variables and factors necessary for effective distance education programs" (p. 1). Eighteen different statements were obtained from the question "What can administrators in distance education do to improve distance learning program quality and success?" (Husmann & Miller, 2001, p. 3). A list of the most highly agreed upon responses from the administrators reflects their concerns regarding the need for ongoing faculty training, faculty support in relation to materials and work incentives/rewards, quality within programs, cost competitiveness of online programs and appropriate planning timelines. Other research indicates similar concerns expressed by faculty (McKenzie et al., 2000).

Findings also suggest that distance education administrators "see their job as one of facilitating program quality rather than owning responsibility for program success" (Husmann & Miller, 2001, p. 5). They also found "that administrators perceive quality to be based almost exclusively in the performance of faculty... the logical conclusion is that there is a need to invest heavily in programs that enhance faculty performance" (p. 5). These administrators' responses strengthen the importance of faculty recognition and support in online distance programs where faculty members face the challenges of new technologies.

Bates (1997) expressed concerns regarding faculty development, high quality, resource commitments, faculty rewards, responsiveness to changes and trends, customer-focus and cost-effectiveness. Wilson (1998) also supported Bates when he stated that:

> Institutions must develop the infrastructure to provide: technical training, technical support, administrative support, time for faculty to develop and teach these courses, a revised faculty reward system, and reliable computer hardware. Faculty concerns about Web-based distance education were universal and not significantly different based on the discipline or type of postsecondary institution (p. 8).

Cyrs (1997) expressed concern for administrators who thought that there were no differences between traditional classroom teaching and teaching at a distance. He stated that:

> Institutions that perpetuate this attitude and do not provide training for distance learning instructors will not survive in the growing student consumer market. Those telecourses that have been designed or modified for mediated communication in real and delayed time and whose instructors have been trained to take advantage of the visual and interactive nature of the growing number of delivery systems will be the choice of potential students. (p. 15)

Clark (1998) also stated that " distance educational delivery systems that encourage innovation and flexibility have the potential for maximizing use of institutional infrastructure, improving access to courses, and providing consistency for course content taught at multiple locations" (p. 331).

Summary

Administrators represent a significant component in the maintenance of quality online education programs. The literature identifies their role in the cost efficient management of programs that appeal to students and the motivation of faculty for

program success. Decisions regarding policies and practices for online program development should represent the needs of learners, faculty and the institution. Management decision making therefore requires knowledge of the learner profile, the faculty, and technology. The literature acknowledges the importance of their understanding, support and commitment to quality online programs.

Conclusion

This paper has examined four components that are the basis for post secondary online distance education development and delivery. The impact of technology in an online learning environment has posed challenges for all components. The rationale for this review has been to acquaint those individuals who are new to online teaching and learning with the challenges involved in this medium of educational delivery. Knowledge of the capabilities of technology in education, the challenges offered to all participants, and some of the strategies employed to cope with issues arising may serve to increase the comfort level and effectiveness of faculty who are preparing for new online delivery formats.

This paper highlighted the dynamics of each of the components and the importance of effective integration and interaction between the technology, learners, faculty and administrators for successful, quality online programs. Research is scarce regarding the development and delivery of nurse practitioner education in Canada. Therefore, a review of the research and experiences with online distance education programs can provide significant implications for nurse practitioner programs as they learn to effectively work with this new medium for advanced nursing education.

Paper # 3: A Typology for Faculty Practice Within Online Nurse Practitioner Education

Introduction

This paper evolves from an analysis of the literature reviewed regarding online distance education and personal reflections of my experiences and observations as a faculty member involved in the transition of the PHC-NPP to online distance delivery. A case study of the online Primary Health Care Nurse Practitioner Program at the Centre for Nursing Studies is presented. Examples of decisions and activities undertaken throughout the phases of development and delivery of this online program are described and analyzed from the perspective of the literature reviewed in the second paper of this folio. Throughout the transition experience, my concern for the maintenance of quality education for nurse practitioners was a significant concern, as was made evident in the first paper of this folio.

In this last paper, I synthesize knowledge acquired through the compilation of the folio and through personal experiences for the development of a typology designed to clarify the key determinants of quality online program development and delivery. Common threads or themes emerged from an examination of the technology, the learner, faculty and administrators and these themes led to the formation of a typology which can be used to measure or assess for quality development and delivery. This typology includes five categories: preparedness, relevance, interaction, time and support. Each of these categories represents a key determinant critical to online education. The typology may prove most beneficial to individuals who are new to the online distance educational format.

As my particular interest in this investigation is from the perspective of instructor, I have chosen to focus on use of the typology by faculty members. Husmann and Miller (2000) reported that administrators attribute the quality of online programs to faculty performance. Therefore, it is critical that faculty are cognizant of these key determinants when striving for quality programs and student success. I propose the use of this typology as a framework of key determinants that are significant to faculty roles as facilitators of quality nurse practitioner programs. Meaningful assessment and effective management of these factors will contribute to quality nurse practitioner education and the advancement of the nurse practitioner role. Appropriate attention to these key determinants can assist in reducing stressors for students and faculty, improving satisfaction and retention, and enhancing student success.

Nurse Practitioner Program Development: The Online Experience

The Centre for Nursing Studies has taken an innovative approach to the continuing education of nurses in Newfoundland and Labrador by offering the first Nurse Practitioner Program in an online distance format in this province. This format of delivery has made the program accessible to more nurses across the province through the medium of advancing technology. The online technology has provided the opportunity for more communication and interaction between students and faculty than in traditional correspondence methods of distance education. The Primary Health Care Nurse Practitioner Program at the Centre for Nursing Studies graduated its first students from this online distance program in April 2002. An overview of experiences in the development and delivery of this program is presented to illustrate this program's application of principles to practice. Details related to the program's goals and objectives,

course descriptions, nurse practitioner roles and competencies, full time and part time curriculum map, computer requirements and online delivery are posted on the Centre for Nursing Studies web address at www.cns.nf.ca.

Program Planning

As discussed in the first paper of this folio, the need for nurse practitioners and for an educational program to prepare these nurses was already established through forums involving representatives from communities, government and health care professionals. With the financial commitment from the provincial government, the program was successfully designed and implemented, using a traditional onsite mode of delivery.

The need for increased accessibility to the program was determined due to requests from nurses who were living and working in rural and remote areas of Newfoundland and Labrador. Preparations for an online program began with a needs assessment in 1998. Faculty at the Centre who had experience and education in computer and information technology conducted an analysis in collaboration with an external IT design firm. A written report outlining the results of their work provided recommendations which helped to guide the planning, design and delivery of the online Nurse Practitioner Program.

The curriculum and program advisory committees, with representatives from the various stakeholder groups, were involved in the planning for content and program outcomes for the initial onsite Nurse Practitioner Program at the Centre for Nursing Studies. An external committee which included past graduates of the program served in an advisory capacity during the planning for the move to the online distance delivery format. Since commencement of the first onsite program, students have been represented

on the committees and their feedback has been instrumental in making changes to the program. The increased length of the program is an example of a change brought about partly from students' concerns regarding the course workload in the previous onsite time frame, and the need for additional study time in the more self-directed learning environment of online education.

The first offering of the program commenced in January 2001 and students graduated in April 2002. A full time and part time stream of learners began in September 2002. Full time students are scheduled to graduate in December 2003. Students in the part time stream should graduate in December 2004.

Program Design

The content of the Nurse Practitioner Program at the Centre for Nursing Studies was already established. A change in delivery format did not alter the required knowledge, skills and competencies of the nurse practitioner graduate.

As a faculty member in the nurse practitioner program, I was a novice to technology and the concept of teaching online. Therefore, I functioned mainly in the role of a content specialist. I was provided with an introduction to WebCT design, Web capabilities and Web interface. I worked closely with more technologically experienced faculty members who helped to input course data and offered suggestions for the most appropriate methods and tools for the content and delivery of my courses. Knowledge of the major issues surrounding Web-based program delivery was reflected in strategies developed to enhance the learning/teaching environment. Attention was focused on maintaining a user friendly web interface in order to facilitate time efficiency and easy maneuverability through the online content.

Faculty and administrators decided to require students onsite attendance for designated time periods throughout the Program. This was designed to facilitate program orientation and to provide an opportunity to enhance learner proficiency in the use of technology. Learner communication and networking would also be encouraged with face-to-face contact. Health assessment labs conducted by faculty during this time were provided to assist the learner with some of the skills necessary to initiate clinical placements with preceptors.

The length of the program was increased from three to four semesters (sixteen months) in recognition of increased study time for students and increased workload for faculty. Clinical elements in each semester, this increased the total hours of student clinical experience over the duration of the program. The quality of clinical learning experiences would be facilitated and monitored through a number of onsite laboratory sessions, frequent contact with learners and preceptors, frequent clinical site visits and increased clinical time. The last semester of the program would remain a sixteen-week clinical practicum, with family physicians or nurse practitioners as clinical site preceptors.

Program Delivery

Upon acceptance into the program, students were notified regarding the designated computer equipment, software and Internet access for participation in the online distance Nurse Practitioner Program at the Centre for Nursing Studies. Learners were sent anatomy and physiology modules which had been previously developed by the Continuing Education Department at the Centre for Nursing Studies, to facilitate

independent review prior to commencing the Advanced Health Assessment Course in the first semester of the program.

An initial three-week onsite orientation appeared to have had a positive impact on learners. The face-to-face contact facilitated the formation of bonds of friendship and support within the group. As a faculty member, the face-to-face contact enabled me to assess the learner's visual clues regarding comfort level with the technology, and with course and program expectations. The time periods spent onsite in class and laboratory sessions also helped me to develop an awareness of individual learner's prior knowledge and competencies and to familiarize learners with the nurse practitioner program values and goals.

Class numbers were low due to a desire to keep workload manageable for a small faculty group. Initial interaction online was low and learners voiced preferences for hard copies of materials for self-study. Marks for participation in some of the courses, increased familiarity with the use of technology, support from faculty and classmates, and completion of group assignments may have been some of the reasons for an increased level of responses to faculty inquiries and an increased student presence online. A high level of interactivity was achieved through course and private e-mails, asynchronous discussion forums, bulletin board postings and teleconferences. The learners telephone access to instructors was facilitated though establishing a 1-800 number. Additional course information and content materials were also mailed and faxed to the learners.

The last semester of the online Primary Health Care Nurse Practitioner Program consisted of a clinical practicum with no required online content. Learners voiced dissatisfaction with a resulting decrease in the level of communication in that semester.

They displayed initiative by posting clinical case studies and conducting follow up group discussions. I believe that this action demonstrated their increased comfort level with this method of learning, responsibility for their own learning, and progress with critical thinking skills and clinical decision making abilities. These aptitudes are necessary for the future nurse practitioner.

Research by Andrusyszn et al. (1999) confirmed the learners' desire for face-to-face contact. This was addressed at the Centre for Nursing Studies by the onsite delivery of portions of the Nurse Practitioner Program. An initial three-week period was followed by short onsite elements at the end of each semester. This time was used for theory and clinical testing of content covered in the semester. Some of the more difficult content for the following semester was presented in class during these onsite times. Clinical skills were also further developed through scheduled laboratory sessions during the learner's time onsite. During all semesters faculty members made regular visits to student clinical placement sites. The purpose of these visits was for student support, clinical teaching and student evaluation in collaboration with clinical preceptors.

A variety of learning methods and modes was included in the delivery of the various courses in the online Nurse Practitioner Program at the Centre. This was designed to meet the individual learning styles and needs of the adult learners, and therefore, foster engagement and motivation of participants. Within the Web site, learning activities were posted which were sometimes optional or compulsory. These included pre and post-tests, workbook activities and case studies. All online activities were asynchronous. Weekly unit completion dates were posted as milestones to facilitate course scheduling and to encourage students to keep on track. Content was provided through posting of unit

objectives, key concepts, Internet links, and required and/or suggested readings. Health assessment videos and a CD-ROM were loaned to students to assist in learning health assessment skills. The onsite class and laboratories enhanced the learning of more complex content and increased face-to-face contact.

A case-based approach to the study of common health care disorders was used to help in the application of new learning and to reinforce the relevance of the content for the learners advancing scope of practice as a nurse practitioner. This was designed to foster students' active participation in the learning experience and to enhance critical thinking and decision making skills (McAlpine et al, 2002; Zwirn, 1998). This describes the essence of the online learning environment within the nurse practitioner program. Self-study combined with prior experiential learning of experienced nurses formed the basis for forum discussions and group work.

A multidisciplinary approach was used in the design and delivery of the onsite nurse practitioner program. A collegial, collaborative approach was maintained in the delivery of the online program though the continued involvement of physicians, pharmacists, nurses and other health care professionals in the presentation of specific content onsite and via teleconference, and in the provision of clinical practicum experiences.

Program Evaluation

This part of the development process involves timely assessments in the form of formative and summative reports of all aspects of the program including individual courses, faculty members, learners and the tools used for program delivery. This phase of

the process is critical to effective updating and revision of the program to better suit the needs of the learner and to maintain quality nurse practitioner education.

Evaluation has been critical to the transition of the nurse practitioner program from onsite to Web-based delivery. The initial needs assessment and course pilot provided support for course design, content and policies. The ongoing informal feedback sought from students has been influential in the program's efforts to maintain a positive environment for learning. In addition, the learners completed formal written evaluations at the completion of individual courses.

Formative student clinical evaluations are completed by faculty, periodically throughout each semester, in collaboration with each student's preceptor. Appropriate remediation is provided, as necessary. The format for clinical evaluations is the same as when students were onsite. The same competencies and standards have to be met, if the program is to graduate qualified, competent nurse practitioners. Written examinations follow original blueprints. Grades indicate that student mastery of content is conforming with the literature in that performance on tests is comparable to that of previous onsite students (Gibson & McHugh, 2000).

The program is further evaluated through the completion of surveys by clinical preceptors. A post graduation employer survey is also completed one year following graduation. Results from these surveys are important to the planning and delivery of subsequent classes. Employers, nurse practitioners and patients have previously shown a high level of satisfaction with the role (Centre for Nursing Studies, 1999, 2000). The first post graduate survey of the online program delivery is scheduled for April 2003.

To further validate the credibility of the onsite program, experienced external program evaluators conducted a rigorous assessment in October 1999. The evaluation of the onsite program was based on criteria established by the Association of Registered Nurses of Newfoundland and Labrador. Three-year approval status was awarded to the Nurse Practitioner Program at the Centre for Nursing Studies. The online program is presently awaiting approval following another assessment review by external evaluators which was conducted in February 2003. Unofficial preliminary reports from the evaluators have been very positive.

Personal Faculty Perceptions

Based on my experiences as a faculty member in an online distance program for nurse practitioners, I present a number of observations relating to registered nurse learners:

1. At the present time, many experienced nurses are not sufficiently computer literate to make a smooth transition to online learning. This is based on my assessment of students' initial difficulties with technology, students' reduced online presence at the beginning of the first semester, and students' heightened online activity as the program continues.

2. Nurses enrolling in full time online distance study do not have an accurate understanding of the workload and time required. Many nurses appear to have the misperception that they should also be able to maintain full time employment because it is a distance program. This perception is based on the numbers of students who endeavor to maintain full time employment despite a full time course. The heavy course load

combined with employment responsibilities appears to create much stress for those students. Many nurses reduce employment hours as the courses progress.

3. Many nurses enroll in the nurse practitioner program without a basic understanding of the level of education required to meet the standards and competencies required for this advanced practice role. This is based on concerns some students express related to relevancy of various courses. This appears to change as the students advance through the program and are able to articulate the comprehensive nature of the nurse practitioner role.

4. Though nurses who enroll in the program appear interested and very motivated, many appear to struggle initially with the development of adequate study habits and time management due to a prolonged absence from full time study. This is based on the assessment that most nurses have taken short continuing education distance courses or attended 1-2 day seminars while employed full time. Learners appear to gradually adjust to this new delivery format.

5. Each experienced nurse mirrors the description of the adult learner in relation to significant prior nursing experience, commitments and responsibilities (personal, financial, and professional) which influence opportunities for success and they eliminate a strong desire to be involved in decisions regarding his/her learning and preferred learning styles. This is based on the fact that experienced nurses are generally not inhibited in their requests for policy exceptions or individual considerations due to personal situations.

The PHC-NP Program at the Centre has tried to respond to these issues in a variety of ways. A technology information session is held relating to computer use,

WebCT interface and utilization of the appropriate WebCT tools used in the various courses. Writing skill sessions and counseling services are also provided to help students adjust to the academic demands of the program. Each student is also assigned a faculty member as an advisor. In recognition of the diverse roles and responsibilities of the adult learner, faculty and administrators respond to student requests and problems with individual solutions whenever possible.

Some of these issues may be resolved, as more nurses in the future are Baccalaureate prepared and have a better appreciation and understanding of advanced practice roles. Nurses of the future will also have had more exposure to computers and the web and should therefore have enhanced computer skills. Baccalaureate prepared nurses should have developed their study habits, writing skills and research abilities to meet the demands of higher academic programs. I believe these factors will facilitate online program delivery and reduce the amount of onsite time required within the present program.

A Framework for Assessment

My review of the literature and experiences as a nurse practitioner faculty member have enhanced my awareness of the significance of the following four components under discussion: the technology, learners, faculty and administrators. An understanding of all the factors surrounding the role of each of these four components is significant for effective interaction and collaboration in the design and delivery of quality online nurse practitioner education. Many of these factors arising in online programming represent common threads affecting all four of the components. The interdependence of many of the factors discussed increases the complexity of online distance education,

especially for a novice online faculty member. Therefore I propose a new approach to bring order and structure to all factors and to make them more applicable to practice. An analysis of the information obtained through my review of the literature and experience with the online nurse practitioner program can provide a framework for faculty assessment during design and delivery of any nurse practitioner program. I have constructed a typology which classifies all major characteristics that novice faculty need to attend to in the development and delivery of online nurse practitioner programs. This typology includes the following categories: preparedness, relevance, interaction, time, and support. These categories assimilate the many factors of which faculty must remain cognizant in order to assure quality online nurse practitioner education.

Preparedness

The category of 'preparedness' represents a pattern that emerged from my investigation of the literature and my experiences as a faculty member in an online nurse practitioner program. Some of the factors which contributed to the critical need for 'preparedness' for student and program success include: the challenges of this new nurse practitioner role, the requirements for student success in online distance education, learning curves regarding new technologies, learner preferences, the changing faculty role, and the infrastructure needed to support online education.

Mueller and Billings (2000) provide support for the need for preparation and readiness as learners enroll in an online distance education program. Nurse practitioner online distance education opportunities represent a new experience for the majority of nurses in Canada. Scholars have discussed how the adult learner's self-direction' and readiness triggers a problem-centered orientation to learning (Knowles, 1973; Merriam &

Caffarella, 1991). Therefore, the learner needs to be fully informed about program goals, content, and requirements before making decisions concerning selection of educational programs (Ali et al., 2002). Student preparedness implies a need for an honest self-assessment in determining readiness, ability, and willingness to engage in such a new educational experience. Such an assessment should examine the learner attributes necessary for successful completion of online nurse practitioner education. The need for basic computer skills, good interpersonal and communication skills, time management skills and good study skills are some of the attributes that are beneficial to the nurse entering the online learning environment (Kearsley, 2000).

Prior to acceptance into the Nurse Practitioner Program at the Centre for Nursing, students are responsible for obtaining their own clinical preceptors. This requires learners to have sufficient knowledge regarding program goals and expectations in order to recruit interested and informed preceptors. First-time preceptors are further acquainted with program goals and objectives through initial visits by faculty.

Research by McKenzie et al. (2000) confirmed the faculty's need for an extensive learning curve for preparation and readiness prior to commencement of the online distance nurse practitioner program. This involves a willingness to work collaboratively within a team approach, in order to familiarize themselves with the technology; and to design course activities which use appropriate tools for a variety of learning styles, and which are relevant to meeting course objectives (Bates, 1997). Faculty need to be able to demonstrate proficiency of the Web as a research and information tool if they expect nurses to see the value of acquiring such skills themselves and to understand the relevancy of such skills to their continued learning and clinical practice. Future learners

entering nurse practitioner programs will have a stronger knowledge level and comfort with the technology due to earlier exposure to technology throughout the education system. Therefore, faculty members must also keep up with advances in educational technology in order to teach in online nurse practitioner programs.

Assessments in the form of checklists can assist in creating conscience awareness of the importance of adequate preparation for online teaching and learning. Criteria included will vary depending on specific program policies and procedures. It has been well established that students need to be well informed and prepared upon entering a program in order to be satisfied and motivated to succeed (Chyung, 2001; Mueller & Billings, 2000;). Due to the significance of preparedness for student success and program retention, I have included a few criteria that may be included in a learner checklist prior to entering a nurse practitioner program:

1. Assess personal attributes supportive of online distance learning (completion of online self-assessment survey).
2. Conduct comprehensive review of nurse practitioner program goals, course requirements and expectations (online and/or through consultation with faculty).
3. Assure sufficient resources to meet technological needs, financial commitments and personal/family responsibilities.
4. Determine the availability of a suitable clinical preceptor.
5. Determine best study option (full-time or part-time).

I have also designed a list of criteria that may assist faculty in attending to preparedness for quality programming:

1. Collaborate as necessary with appropriate technological support persons for desired online course revisions and/or additions.
2. Prepare pre-course information packages.
3. Arrange student instructional sessions (i.e. computer skills, writing skills).
4. Establish collaborative relationships with learner clinical preceptors.
5. Review student data to become aware of learning needs related to online distance delivery mode.

Both checklists reveal interdependence between faculty and students for program preparation/readiness, as faculty must assure that information available to students is current and accurate.

Relevance

The 'relevance' category evolved from my growing awareness of the significance of appropriate content and methods to student retention and for the education of competent nurse practitioners who can meet the primary health care needs of our communities. The recognition of this category also came from my review of the literature regarding characteristics of the adult learner and learner preferences. As a faculty member I have also observed increased student use of web based technology for independent learning and networking as students progress through an online nurse practitioner program. This observation strengthened my belief that as content and methods become more manageable and meaningful, students' satisfaction and use of the technology as a learning tool increases. Therefore 'relevance' emerged as a necessary inclusion in this typology.

This category also acknowledges the need to assess the web use and its significance to student learning. Online tools and methods must be relevant to meeting goals if learners are to become actively involved (Merriam & Caffarella, 1991). The increased self-study requirements leaves little time for participation in activities that are not thought to be worthwhile to learning. If faculty wish to develop greater levels of learner engagement and the development of critical thinking skills for this advanced level of practitioner, they need to include opportunities for group discussions and simulations for optimal learning within their courses (Gandell et al., 2000).

As a faculty member, my decisions regarding the presentation of content will determine the degree of interactivity and relevance of activities and resources provided for students. I must also strive to avoid bias and overuse of certain learning tools and methods. The students' feedback regarding relevance of content, resources and activities is helpful in confirming appropriateness of course design and delivery. Kearsley (2000) acknowledges the importance of meaningful, realistic course work. Though all may seem relevant, I believe it is wiser to strive to determine which tools and strategies are most beneficial to quality learning for this group of learners and eliminate required activities that may be less significant. I believe this to be especially true with heavy workloads in online distance education. This will help to avoid information overload online which is a detriment to student success (Chyung, 2001).

The following list can help faculty to remain attentive to factors that are relevant for quality program development and delivery. In addition to items in the list, Zwirn (1998) advocates the relevance of a problem solving approach to learning for creativity

and collaboration. Both characteristics of creativity and collaboration are desirable in the role of a nurse practitioner.

Faculty 'Relevance' check list:

1. Do online course objectives reflect knowledge and skills required for nurse practitioner practice?
2. Does online content give sufficient guidance for learners in reviewing learning resources?
3. Are learning resources relevant to meeting course objectives?
4. Are all online learning activities really necessary for the acquisition and application of knowledge and skills required of the nurse practitioner?
5. Which activities best address the critical thinking and problem-solving abilities required of nurse practitioners?
6. Is there enough variety in activities to challenge learners with different learning styles and experiences?
7. Do course workbook and tests assess the most pertinent knowledge and skills required of a beginning nurse practitioner?
8. Do the online content and activities facilitate an appropriate balance between the three types of learning (knowing, understanding and thinking)?

These questions serve as examples for determining if online program design, content, and methods are meaningful to nurse practitioner students and necessary for the achievement of program goals.

Interaction

I have included 'interaction' in the proposed typology due to the preferences expressed for maintaining face-to-face contact in online learning. This preference was evident in the literature and expressed in evaluations completed by many of the nurse practitioner students in the PHC-NP Program at the Centre. In recognition of the need to avoid feelings of isolation and to acknowledge the need for a collaborative approach to online nurse practitioner education, I propose 'interaction' as a key determinant requiring the attention of faculty.

This category is particularly important to the mentoring, role socialization and skills development of nurse practitioners. The need for adult learner participation in the learning process and their preference for face-to-face contact necessitates a high level of interaction in online education (Andrusyszyn et al., 1999; Cragg et al., 1999; Gandell et al., 2000; McAlpine et al., 2002). The increased interaction between learners, preceptors and faculty for the development of new psychomotor skills makes this category critical for the delivery of quality nurse practitioner education. Evaluations completed by the 2002 nurse practitioner graduated revealed a desire for increased face-to-face interactions, faculty skills demonstrations, teleconferences and more exposure to nurse practitioner preceptors.

Learning has also been identified as a social situation (Jarvis, 1987; MacKeracher, 1996). The online interactive activities support social connections by the sharing of knowledge and experiences among students. This sharing decreases feelings of isolation caused by the distance experience and helps maintain bonds formed within the group during the initial onsite portion of the distance program. These alliances can be critical to

the future development of the nurse practitioner role, as nurse practitioners maintain contact and work together to lobby for change in their practice and legislation. Students express a preference for face-to-face instruction, yet express satisfaction with not having to leave their families for full time onsite attendance. This preference may indicate a need for continued creativity in developing methods to enhance interaction while decreasing onsite time. The following check list for assessment of attention to interaction also demonstrates an understanding of the need for collaboration with technology, learners, administration and faculty (Bates, 1997, 2000).

Faculty 'Interaction' check list:

1. Identify student and faculty emails, fax numbers and telephone numbers.
2. Arrange teleconferences for small group discussions and the presentation of appropriate information.
3. Post case studies for asynchronous discussion forums.
4. Set dates for synchronous chat lines.
5. Post workbooks and practice quizzes.
6. Establish an acceptable response time to postings.
7. Suggest appropriate web links.
8. Arrange time schedule of clinical visits.
9. Arrange tutorial time during clinical visits.
10. Arrange dates for clinical progress reports by preceptors and students.
11. Arrange meetings with technology specialists and administrators regarding required technical updates or course resources.

The examples above acknowledge the importance of online participant interaction, face-to-face contact, and collaborative planning for effective online nurse practitioner education.

Time

This 'time' category became evident in my own experiences as online faculty in the PCH-NP Program at the Centre. Consultations with technology specialists, learning curves of students and faculty, and the increased one-on-one online interactions with individual students are some of the factors that contribute to further time commitments as an online faculty member.

The increased time and commitment required for online teaching and student learning has been well documented in the literature (Care & Scanlon, 2001; Gandell et al., 2000; Kearsley, 2000; Mann, 2000). In the PHC-NP Program, schedules are posted with due dates in order to keep students on track. This can be helpful to students as time management is important for self-study and the timely completion of course assignments (Kearsley, 2000). The need for flexibility of study time is acknowledged through limiting the numbers of teleconferences and synchronous activities.

Faculty facilitation of online courses necessitates increased one-on-one time with individual students. As an online faculty member, I have found that students who are studying at times that best suit their busy schedules, expect and need prompt feedback which may be requested at times other than regular office hours. This requires flexibility in my work life (Husmann & Miller, 2001). The literature reports management's recognition of the changes in faculty workloads due to online distance delivery.

Input from technology specialists, learners, faculty and management should be sought for effective strategies to facilitate quality learning environments with time lines and performance expectations that recognize the responsibilities and commitments of adult learners and faculty. A part time study option is one way of accommodating adult learners. The following check list for faculty can help with time management and also acknowledges the workload demands associated with online programs:

1. Review student course evaluations to determine any changes or additions to content or activities.
2. Determine types of changes desirable and estimate time required.
3. Meet with administrators regarding release time for course preparation and revisions.
4. Evaluate course unit content, resources and expectations for student and faculty manageability within designated time periods.
5. Complete personal schedule of designated online time requirements, teleconference times, class and laboratory times, and clinical times (faculty practice and student clinical).

These examples identify some of the tasks requiring attention to 'time' management and scheduling within an online nurse practitioner program.

Support

The literature reviewed and my experiences have contributed to the inclusion of support as another key determinant for the development and delivery of quality nurse practitioner education. The education of nurses for a new scope of practice within an unfamiliar medium is an endeavor that I have found to create 'support' concerns for

learners, faculty, technology and administration. This category can include emotional, financial and resource concerns of all participants in the process, including issues ranging from personal family responsibilities to infrastructure requirements.

This category is vital for online learning. Dissatisfaction due to technical difficulties interferes with student success and can lead to increased attrition (Billings, 2000; Chyung, 2001; Cragg et al., 1999;). Participants need ongoing support in maneuvering Web based courses due to varied computer skills and occasional operational difficulties (Cragg et al., 1999). Technological support is also critical for the design and delivery of effective tools and strategies as well as ongoing program maintenance (Bates, 1997, 2000).

The introduction of technology to distance education also brings added financial concerns for program administration. Therefore, administrators need to collaborate with faculty and technology for the design and delivery of quality, yet cost effective educational programs. It has been recommended that online classes should be small (Chyung, 2001; McKenzie et al., 2000). However, frequent changes due to the speed of technological change also pose challenges to administrators of programs with small enrollments (Bates, 2000).

The literature implies the need for user friendly programs and student support to aid in maintaining "a balance of energy" and the "opportunity for success" required for the adult learner (Knox, 1980). This was evident in the online PHC-NP Program through evaluations completed by graduates who revealed satisfaction with high levels of faculty support and interaction online.

Check lists dealing with support issues can keep faculty alert to the issue of support. Students in the nurse practitioner program in Newfoundland and Labrador have limited role models as they progress through the program due to the limited numbers of nurse practitioners throughout the province and the geographical barriers. Increasing numbers of nurse practitioner graduates will provide support and mentoring to students as they embrace this advanced role for nurses. The following checklist identifies a number of activities focused on enhancing faculty attention to support as a key determinant to quality online nurse practitioner programs:

1. Provide students with a list of computer equipment and software that is required to ensure program accessibility and compatibility.
2. Post online help number.
3. Orientate student clinical preceptors to course expectations and program goals.
4. Provide constructive student feedback.
5. Plan student tutorials or remedials, respecting student needs and preferences.
6. Consult with instructional design specialist and computer support persons regarding advisability of desired changes to online tools.
7. Assess relevant new technologies available.
8. Meet with management to identify resources and release time needed to facilitate online course revisions.

These identified tasks also illustrate the interdependence between learners, faculty, technology and administrators. Each of these four components could develop check lists to assist them in attending to 'support' related concerns during the development and delivery of online nurse practitioner educational programs.

I propose that each of the categories of the typology that I present are key determinants of quality online education for nurse practitioners. The criteria within each category may be used as guides to direct novice faculty in monitoring or assessing their attention to these critical factors in online nurse practitioner education.

Summary

This paper presents an assessment typology that identifies key determinants for consideration in the development and maintenance of quality online nurse practitioner education. The suggested criteria within each category of the typology also illustrate the need for interaction and collaboration between technology, learners, faculty and administrators. The typology can form the basis of a generic tool for online programs. A description of the online PHC-NPP at the Centre for Nursing Studies was presented as a case study of a professionally approved nurse practitioner education program. The lists of faculty responsibilities were determined from available literature and my experiences in the online nurse practitioner program at the Centre. Nurse practitioner faculty who are new to online program delivery may wish to utilize this typology and the examples from the Centre's experiences in developing their own check lists for focusing their attention on key determinants necessary for the development and delivery of quality online distance education.

Conclusion to Paper Folio

The primary goal of this paper folio was to examine significant components necessary for the development and maintenance of quality online nurse practitioner education programs. The identity, role and education of the nurse practitioner was described in order to create an awareness of the urgency for quality education for the continued development and evolution of this new practitioner in our health care delivery system. An examination of the literature revealed an interactive and collaborative relationship needed between technology, learners, faculty and administration. The folio also provided a case study of an online nurse practitioner program.

A number of issues became apparent from the literature and the experiences of the online program described which emerged as common threads for consideration surrounding learners, technology, faculty and administrators in the development and maintenance of quality nurse practitioner education. These common threads were synthesized into an assessment typology for consideration in the development and facilitation of quality online education for nurse practitioners. The typology is a generic framework that may be adapted for any of the participants involved in online nurse practitioner program design and delivery.

As a nurse practitioner faculty member, I chose to illustrate the application of the typology for those working in online nurse practitioner programs. This is due to my personal concern for the effectiveness of faculty as instructors in online education. Examples are provided of questions and tasks for consideration as faculty attend to each of the key determinants identified. The typology may prove helpful to novice online

distance faculty as they strive to maintain quality in the development and delivery of online nurse practitioner education.

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APPENDIX A

TOOLS AND STRATEGIES

Tools and Strategies

With online courses, the syllabus, course outline, content and other resource information can be electronically posted for student preview at any time. E-mail, bulletin boards, forums, and chat rooms are used to facilitate two way synchronous and asynchronous communications. Kearsley (2000) describes some of the most common tools and applications of Web-based technology.

Communication Tools

A brief discussion of the most common tools for communication can enhance understanding of how technology can help to bridge the geographical gap between faculty and learners in distant education programs.

E-mail.

"E-mail is the foundation for all forms of online learning and teaching" (Kearsley, 2000, p. 28). It is very cost-effective, and needs minimum equipment. It is most effective when accessed and responded to regularly. However, problems occur, as with any Internet tools, when servers 'go down' or when there are power outages. Frequent changes in e-mail addresses can also create frustration and delay communications and the transfer of course related information.

Threaded Discussions

Threaded discussion systems, also referred to as asynchronous conferencing, forums, or bulletin boards, are the second most commonly used online tools (Kearsley, 2000). Responses to questions or discussion topics can be reviewed and posted for all learners and faculty to see. It is important that learners post responses under the appropriate topic to avoid confusion. Faculty must monitor and manage the discussions to

avoid chaos within the forum. This form of discussion permits learners to view the responses of their classmates and prepare a satisfactory response which they are happy with before posting. Learner shyness or lack of confidence may reduce participation in a regular classroom, but such learners may be more comfortable responding when they can reflect on the subject and post a response that has been more prepared. Faculty can also use virtual clinical conferences via e-mail or bulletin boards to monitor and evaluate students' progress in distant clinical sites.

Chat Rooms

Real-time conferencing occurs in chat rooms. All participants see typed messages as soon as they are sent. This permits more spontaneous interaction and may require a moderator to keep the discussion on track if there are more than three or four learners online. An advantage of chatrooms is that discussions can usually be saved for future reference when monitoring student participation and comprehension of content.

Desktop Video Systems

Desktop video systems are "the most advanced form of real-time conferencing" (Kearsley, 2000, p. 33). This consists of real time conferencing using audio and visual images and requires a small camera is connected to the computer. When a direct link is made to another person, it is called a point-to-point connection. An advantage is the face-to-face contact which provides a personal touch, in attempting to prevent feelings of isolation. The number of people who can participate simultaneously depends on technical issues such as type of video-conferencing program, type of modem and Internet connection, and bandwidth or transmission capacity of the connections. Currently a lag in response time exists with this tool. This may be annoying and/or distracting to learners.

Audio Graphics

Audio graphics is also a real time conferencing system which involves two-way transmission of audio and visual or graphic information via shared whiteboards. All learners can watch and take turns working with them. They require less bandwidth to operate; therefore, they are more feasible than videoconferencing, especially for students in remote geographical areas with less telecommunication capabilities.

Program Support Tools

Technology provides for the efficient presentation of course content and learner assignments. The potential for creative and engaging learning activities is limited only by the knowledge and skill of the course developers. The following tools help to support the delivery and mastery of course content. The communication tools previously discussed can also play a significant role in delivery of content.

File Transfer Programs

A file transfer program is a tool used for sending word processing documents, spreadsheets, graphics or video clips, and slideshows from one computer to another. Documents can also be transferred as e-mail attachments. It is necessary to be sure that the recipient has a compatible program so that their computer can read the format used.

Online Testing

Online testing programs "have the ability to generate random test sets from a large bank of questions" (Gibson & McHugh, 2000, p. 49). These tests can be programmed to be available at a certain time and for a predetermined time period. Students may also receive instant feedback. Though sophisticated and flexible, security, validity and verification of the learner taking the test, may pose problems.

Software Computer Packages

There are also Web based systems available which bring together many of the tools previously mentioned for the development and management of online courses. "Some popular examples are Top class, Blackboard, First-Class, WebCT, and Learning Space" (Kearsley, 2000, p. 42). An advantage of these packages is the ease of use for those who do not have the time or comfort level with technology in developing their own tools.

Computer Simulations

Students can practice the skills and knowledge they learn on computer simulation. "Simulations are usually very interactive and require a lot of computing resources – systems with fast processors, ample memory, and lots of network bandwidth" (Kearsley, 2000, p. 41). They are also time consuming and expensive to produce.

Clinical simulation programs are now available to enhance practice of new knowledge and skills. Anatomy and physiology programs and health assessment programs are available on software, CD-ROM or on the Internet. This is particularly significant for enhancing clinical experience of nursing students. The development of assessment and clinical decision making skills is also enhanced through case study presentations with virtual patients. There are many Internet sites to which students can be linked through their course Web sites in order to complete case studies for individual or group assignments. This can increase knowledge and skills with various clinical problems in a safe, non-threatening environment. Learners can develop clinical confidence at their own pace and with no fear of making a mistake with a real patient. This would be particularly helpful with nurse practitioner students.

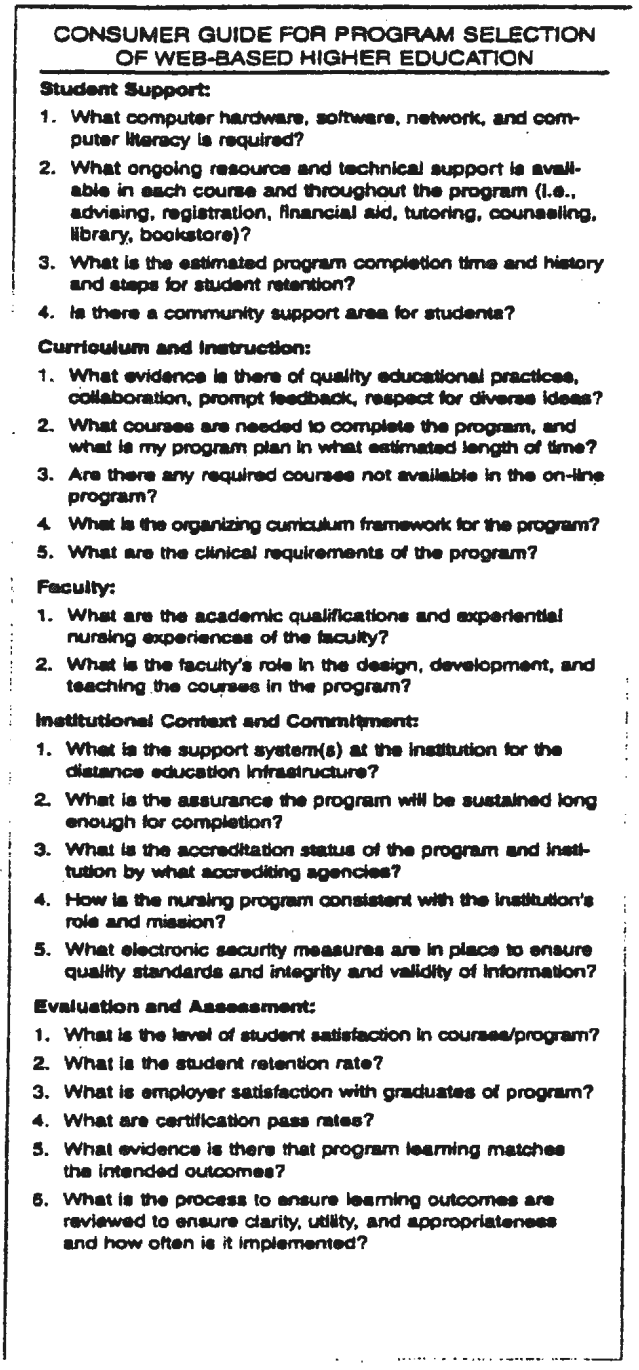
Traditional Distance Methods

Incorporating previously employed traditional distance technologies, as appropriate, can also enhance learning. This would include the use of audiotapes, videotapes, telephone calls, teleconferences and videoconferences.

All technologies when appropriately employed can help to engage students in the learning environment, and bring them together as a class despite geographical barriers learning.

APPENDIX B

CONSUMER GUIDE FOR PROGRAM SELECTION OF WEB-BASED HIGHER EDUCATION



CONSUMER GUIDE FOR PROGRAM SELECTION
OF WEB-BASED HIGHER EDUCATION

Student Support:

1. What computer hardware, software, network, and computer literacy is required?
2. What ongoing resource and technical support is available in each course and throughout the program (i.e., advising, registration, financial aid, tutoring, counseling, library, bookstore)?
3. What is the estimated program completion time and history and steps for student retention?
4. Is there a community support area for students?

Curriculum and Instruction:

1. What evidence is there of quality educational practices, collaboration, prompt feedback, respect for diverse ideas?
2. What courses are needed to complete the program, and what is my program plan in what estimated length of time?
3. Are there any required courses not available in the on-line program?
4. What is the organizing curriculum framework for the program?
5. What are the clinical requirements of the program?

Faculty:

1. What are the academic qualifications and experiential nursing experiences of the faculty?
2. What is the faculty's role in the design, development, and teaching the courses in the program?

Institutional Context and Commitment:

1. What is the support system(s) at the institution for the distance education infrastructure?
2. What is the assurance the program will be sustained long enough for completion?
3. What is the accreditation status of the program and institution by what accrediting agencies?
4. How is the nursing program consistent with the institution's role and mission?
5. What electronic security measures are in place to ensure quality standards and integrity and validity of information?

Evaluation and Assessment:

1. What is the level of student satisfaction in courses/program?
2. What is the student retention rate?
3. What is employer satisfaction with graduates of program?
4. What are certification pass rates?
5. What evidence is there that program learning matches the intended outcomes?
6. What is the process to ensure learning outcomes are reviewed to ensure clarity, utility, and appropriateness and how often is it implemented?

Ali, N.S., Hodson-Carlton, K. & Ryan, M. (2002). Web-based professional education for advanced practice nursing: A consumer guide for program selection. The Journal of Continuing Education in Nursing, 33.