

**Multimedia Learning Environments
for Health Care Staff**

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With increased demands on health care staff including work and family responsibilities, increased accountability, longer working hours, and staff shortages, a need exists to develop learning environments that are flexible and convenient (Madiope, 2004). Health care professionals struggle with the constant demands and changes in health care procedures and practices. Together with emerging technology, they need to continually update and learn new clinical skills and basic knowledge. Currently, Saskatchewan nurses may begin practicing nursing once they have completed a post-secondary accredited nursing program and successfully passed a written Canadian nursing exam. They are also required to practice a minimum number of hours in three years to be eligible for continuing registration in the province of Saskatchewan. In this paper I will discuss how distance education using multimedia resources that promote authentic situations using problem-based learning will allow staff to enroll in continuing education without added stress to their work demands.

Although formal regulations do not exist that require health care staff to enroll in continuing education sessions, in the year 2005, Saskatchewan nurses will be asked to attend a continuing competence education session to develop an individualized plan that identifies their unique needs to maintain competence (McKay, 2005). The Saskatchewan Registered Nurses Association (SRNA) has recognized the need for nurses to be involved in the development of a personalized plan that will assist them to remain competent practicing nurses amidst constant change. How nurses will respond to this is yet to be seen. What is known is that Saskatchewan nurses will need to account for their

competence by enrolling in continuing education that focuses on best practices, legislative changes and illness prevention to name a few (McKay, 2005).

In order to meet the demands of the health care staff and requirements for continuing education enrolment to ensure competency, a form of distance education using various multimedia seems likely. As adult learners, health care staff will be involved in learning that will meet their self-directed needs (Knowles, 1984). It will be important that the facilitator in these environments conduct a learner analysis to successfully create a learning community where trust and respect guide communication and engagement in their group. When constructivist principles guide the group, authentic learning occurs through collaborative communication (Mayes, 2001). By using authentic situations based on theory, problem-based learning occurs and there is a greater chance of retention and application of information (Jarvis, 2002). Along with the learner analysis to facilitate creating a learning community it is equally vital to conduct some form of evaluation to assess that the goals and objectives of the environment were met and to make any necessary adjustments in the learning resource for future learners.

Distance education has emerged due to increased technological advances and the increased demands and responsibilities of learners. Historically, distance education was known as correspondence education, but is currently being replaced by a more electronic media (Schlais and Davis, 2001). Distance education programs primarily take place when facilitator and learner is separated by physical distance and therefore use different types of technology to deliver the subject content (Picciano, 2001). This makes learning interesting for both the facilitator and learner as the learners are given more responsibility as self-leaders to take initiative for the pace of their learning. As well, it allows the

learners to think critically, preventing the facilitator to force them to learn. There is a focus on the needs of the learners as well as the requirements of the course. The needs of the learners involve their values and beliefs, as well as their available time. Assessing these needs will influence the development of curriculum and enrollment choices made by the learners.

As adult learners, health care staff will likely be involved in formalized forms of education throughout their lives that tends to be self-directed, independent and problem-based (Tight, 2002). A common model used for adult learning is an andragogical model which is based on the assumptions that adults need to know why they are learning something, that they have a self-concept of being responsible for their own lives, their experiences are a valuable resource, adults are ready to learn those things they need to know, adult learners are more motivated to learn as they bring their experiences to a relevant learning environment, and they are motivated by internal factors such as job satisfaction and self-efficacy (Knowles, 1984, pg. 55-59).

In the andragogical model, the first assumption is that the adult needs to know why they need to know something prior to learning it (Knowles, 1984). As stated earlier, adults are self-directed with respect to their learning choices. It makes sense that as we age we question the purpose of learning something new, for example, questioning its applicability in our lives. For adults, the more applicable something is to our lives the more likely we will choose to learn and apply it. As they reflect on their needs and learning gaps, health care staffs are responsive to what and why they want to know something.

The second assumption, the learners' self-concept, also connects to the adult learner as self-directed in making decisions. If given the opportunity to choose a specific learning environment they will have increased success in learning when the experience is self-directed. For adults it is important to be seen by themselves and others as self-directive and having the ability to take initiative (Knowles, 1984). Health care staff are apt to choose learning environments that are suitable to the needs they identified in their competency plans.

The third assumption involves the role of the learners' experience as vast and varied. This is a valuable resource to evaluate prior to developing learning resources for adult learners. By taking into account that the learner brings unique knowledge to the environment allows the facilitator-learner role to be shared by everyone involved. This increases the learners' self-concept as well as the applicability of the information being shared through their experiences. In a learning environment, health care staff will have the opportunity to voluntarily share their experiences and listen to those of their peers. Learning occurs as peers reflect and communicate to each other about their real experiences.

The fourth assumption, that adult learners are ready to learn what they need to know, can be applied to their perceived needs and gaps. As they reflect on what they see as gaps in their learning environment they are ready to engage in an environment that is suited to those needs. They may even see the environment as their choice as opposed to a mandatory inservice and thus receptive to learning. This reflects the SRNA's objective to have nurses in Saskatchewan attend a continuing competence education session to assist

them in identifying their needs to assist in selecting apt learning environments based on the needs identified .

The fifth assumption of an andragogical model is that adult learners are more motivated and ready to learn as they come prepared with their vast experiences and understanding of the application of this knowledge in their lives. It may be appropriate to begin with a more dependent, teacher facilitated pedagogical model, but then move to giving the learner more responsibility with an andragogical model based on the above assumptions (Knowles, 1984). As the facilitator sets a tone by outlining goals and objectives a shift in roles of facilitator and learner can occur as learners communicate with each other and bring their experiences to the group, thereby bringing relevant new knowledge to their environment.

And the final assumption, adults are motivated by internal factors such as job satisfaction and self-esteem and not necessarily grades, job promotions or raises (Knowles, 1984). Adults want to do well at what they do. As learners identify their needs and gaps for continuing competence, their job satisfaction should increase with the increased competence after completing well-suited education session.

The andragogical model allows adults to be leaders in their responsibility to learn as they reflect and identify learning needs and attend education sessions appropriate to those self-identified needs. They will be receptive to engage in those environments, share their experiences, listen to others as well as learn new knowledge to apply in their real experiences. Their job competence and satisfaction may increase and so might their self-esteem if Knowles's assumptions hold true.

Together with the unique needs of adult learners using the andragogical model is the need to develop learning resources that foster learning communities for health care staff. These learning communities are multifaceted as they may involve social, political, spiritual, intellectual, educational, cultural or geographic categories (Schwier, 2001). Multimedia learning environments for health care staff could involve any of these categories but especially the educational component.

To create a learning community, the instructor must first consider the needs of the community. A client analysis would reflect multifaceted categories such as the intellectual, emotional and physical needs of the clients (Everhart, 1998). This data can be used when choosing the required curriculum, instructional approaches, the required resources and class size. Knowing as much as possible about the community will ensure the best learning experience (Simonson, Smaldino, Albright, and Zvacek, 2003).

Once an analysis of the client group has been completed, the instructor can use this information to address the design and course content development. The course design must include content objectives defined in terms of learning outcomes and assignments in collaboration with those outcomes reflected by the learner (Ko and Rossen, 2004). The course development will implement learning outcomes as outlined in the syllabus, schedule, content, evaluation, and activities, which include discussions, group oriented work and research (Ko and Rossen, 2004).

Selznick (1996) identified several features to develop this environment into a learning community as opposed to a group of learners that come together for a common goal, education as opposed to training (as cited in Schwier, 2001). These features include historicity, identity, mutuality, plurality, autonomy, participation and integration. As

health care staffs develop individualized competency plans they will be involved in educational environments that will allow them to share their experiences, involve a shared health care identity, and interdependence of the need to share resources and knowledge as they work within multidisciplinary teams.

The initial stages of these communities will allow the facilitator to set out the goals and objectives of the education environment (Schwier, 2001). These goals and objectives should match those that were reflected by the staff. The purpose of this community is self-directed by the learner as they reflected on this learning opportunity in their competency plan. As the learner takes on responsibility for the learning the community shifts to one where the learner shapes the opportunities and information being shared, similar to the andragogical model. As they share their experiences they take more responsibility for their learning and how they will use this with real experiences.

For health care staff learning may look more like training as they learn and apply new skills in a health care setting but as self-directed, problem-based learners, the complexity of the tasks as well as their learning abilities are higher than those needed for training (Knowles, 1984). Their learning is then based on an education as opposed to a training need. A common health care approach is more consistent with educational learning as it occurs socially in a health care setting and staffs use their experiences to create knowledge (Tight, 2002). This type of continuing education will allow for learning and growth of cognitive development to be significant and lifelong as they learn and apply new knowledge in their work environment (Knowles, 1984).

These continuing education learning environments may be offered using multimedia, as an example, to accommodate learning while at work. The Quebec Virtual

Campus in Health Care is an example of a project that provides health care providers with an online educational environment that will meet their needs regardless of time and distance restraints (Weiss-Lambrou, Bernatchez, Bielec, & Lesperance, 2004). Learning is supported by the multimedia resource and a facilitator.

Strategies and principles for these types of multimedia-learning environments are “. . . based on collaborative learning, authentic tasks, reflection and dialogue. . .” (Mayes, 2001, pg. 17). With increased accountability of the health care professional, this constructivist approach allows the professional to combine their knowledge and skills while self-identifying any gaps in their learning needs, similar to what Saskatchewan nurses will be asked to do in the year 2005 (Weiss – Lambrou, Bernatchez, Bielec, & Lesperance, 2004). Some institutes have the employee annually develop a personal development plan that outlines what they would like to learn and why, as well as how they would successfully accomplish this. The reflective principle allows the learner to reflect individually or within a peer group setting, on their personal experiences (Weiss – Lambrou, Bernatchez, Bielec, & Lesperance, 2004). The use of these principles will facilitate the transfer and retention of knowledge to authentic work situations.

As collaborative learning occurs, health care staffs communicate their experiences and build on the knowledge being presented. A community of practice begins to emerge as they come together with a common identity, as forensic nurses for example (Mayes, 2001). Forensic nurses have a common language unique to a correctional setting. This community then takes on ownership and responsibility for what they are learning and how they will apply it in their work environment as they actively engage with each other.

The multimedia learning environment takes on an authentic social context and is not focused solely on the information being learned in isolation of application (Mayes, 2001).

Simulations of authentic work situations will allow for collaborative learning and can be developed using problem-based instruction. This type of learning will allow for learners to become more familiar with situations they may encounter at work (Viaene, 2004; Vye, Martich, & McBrian, 2003). Staff will use critical thinking skills to discuss the issues just as they would use when applying the nursing process in a real-life situation, but in this educational learning environment they have time to reflect and discuss solutions with their peers. This can be useful in environments such as forensic nursing where authentic practice may be dangerous, such as the use of force on a non-compliant patient (Mantovani, Castelnuovo, Gaggioli, & Riva, 2003).

Highly interactive environments can be created using problem-based learning. By posing questions of the simulated situation, staff can begin to verbalize the problem and possible solutions. These real-world problems don't have clear answers. They are dependent on many unique factors. Health care staff are continually assessing situations and applying the nursing process to each patient and situation. I have learned in my experience as a registered nurse that each patient is unique and presents unique concerns to similar situations. This also shows how learning goes beyond a common training application as each situation is unique.

Problem-based learning allows for the connection of theory and practice with authentic simulations (Jarvis, 2002). The learning that takes place after this connection will be different than the learning that takes place by reading alone. Bork states that “. . . if we provide a variety of learning strategies we have a good chance of achieving learning

with one or the other of these strategies” (as cited in Giardina, Bork, 1992, pg. 3).

Retention of information will be greater as staff view digital video role-plays, act out role-plays and communicate with each other in a group setting for example. In other words, staff engaging in physical and cognitive interactivity will create a learner-centred environment (as cited in Giardina, Giardina, 1992). By using their experiences, or prior knowledge, they can then build on this knowledge by engaging with the material in a variety of ways. The health-care staff knowledge will go beyond knowing to the ability of applying this knowledge as theory validated through practice (Jarvis, 2002, pg. 130).

When the learning community has ended, learning resources should be available in the health care setting. Because this is a problem-based, constructivist learning environment, rote memorization is not necessary and the learner should have resources available to be able to set the pace for continued learning. When courses are held some staff may not be motivated due to lack of experience or interest. By making the resources available for individual use will allow health-care staffs to come back to the learning at a time that may be more applicable. Perhaps they gained more experience with respect to the material being learned and have more prior knowledge to apply new knowledge.

Prior to ending the learning environment, some form of evaluation from the learners and the facilitator should be collected. This will assist with future revisions of the multimedia resources. If this resource is being used early in its development then information gathered may be used for formative evaluation. Formative evaluation is done early in the development of a program so that revisions can occur prior to widely distributing the information (Smith & Ragan, 1999). In a health care setting this can be done using small group evaluation questionnaires, pretests, and posttests as specific

health care areas are involved with specific learning opportunities relevant to their work experiences. Questionnaires should include evaluative questions related to the strategies that were used to benefit adult learners in a health care setting which include communication, authentic situations and reflection for example. It would also be beneficial to collect data on the attitudes of the learners in this environment to assess whether communities of learning has occurred and validate the learners self-direction in choosing this environment. Data collected and observed from the communication that occurs between peers and the facilitator may act as a check to see if what was being presented was being understood (as cited in Davies & Stacey, Maurer, 2003).

Conducting evaluations early on will alleviate frustration for adult learners who may be new to learning using multimedia resources or haven't taken educational sessions for a considerable period of time. By allowing the learner, who has taken responsibility for their learning environment also take responsibility to evaluate the program as well as their sense of increased knowledge will increase feelings of self-direction as they self-evaluate the program and themselves.

If this program has been widely used for a significant period of time, summative evaluation will be appropriate. Summative evaluation should evaluate the purpose of the program being offered (Smith & Ragan, 1999). The challenge is to evaluate its purpose in observable ways. It may be through comparing incident reports, a report filled out by the staff regarding, but not limited to, some type of error in applying a nursing procedure, previous to and following the learning session. This evaluation could occur over a period of time and not just immediately after the occurred. Data could also be obtained through the learners continuing education plan, have their needs changed or have they stayed the

same? This data will then be able to communicate if learning was sustained over a period of time or if a refresher session needs to take place. Perhaps the health care staffs are not involved in the type of learning situations consistently to apply their knowledge and small, frequent inservices would benefit.

In conclusion, with the increased demands on health care staff for continuing competence in their practice, a need exists to develop multimedia distance learning environments that are available and applicable to their unique individual needs. All this while trying to develop learning communities within these environments in a work setting will be a challenge.

As adult learners, they bring to the learning environment a unique set of characteristics based on the assumptions of an andragogical model. These assumptions connect the adults' self-directive approach in what they want to know and why they need to know it. If the learning environment is applicable to their varied experiences they will be motivated to learn and then apply the knowledge in their real experiences. This will increase their job satisfaction, competency as well as their self-esteem.

As learners come together in learning environments, communities will develop as the learning has been directed by themselves in their competency plans or personal development plans. Health care staff comes together in these environments with common identities within specialized groups of health care, they share unique experiences, resources and knowledge as they work within multidisciplinary teams. The learning is retained and applied in their real experiences. Just as with the andragogical model, job satisfaction, competence and self-esteem increase with increased confidence in their job performance and knowledge.

In the community environments a facilitator may set out the goals and objectives to set the tone of the learning environment but then shift the responsibility to the learner to mold the delivery of the information. They become leaders of their lives as they reflect on what they need to know and learn and how they will successfully accomplish this.

The use of multimedia will allow for the development of these learning environments for health care staff. Principles of these multimedia learning environments are based on collaborative learning, authentic tasks, reflection and communication (Mayes, 2001). As learners share their experiences with peers they can reflect and communicate with each other to learn and apply new knowledge. A community of practice emerges.

Discussion of real examples and use of authentic examples in the learning environment allows for problem-based learning to occur. Health care staffs deal with unique situations daily as different patients present with unique concerns. Each situation is a new concern that health care staffs have to assess to develop an appropriate intervention. As learners communicate their assessment and solutions of interventions in a group setting peers will learn from each other. They are then setting community guidelines through this communication and collaboration.

Problem-based learning also allows for the connection of theory and practice in authentic situations (Jarvis, 2002). Retention of information being learned in practice is increased than by reading alone. By providing a variety of learning applications, such as simulations, text, role plays, and communication with peers there is a better chance for increased retention and application of knowledge (as cited in Giardina, Bork, 1992). The

learner is able to actively engage with the information through vision, auditory, kinesthetics and collaboration and communication with a facilitator and more importantly their peers.

Multimedia resource learning allow for learners to set their own pace as well. By making these resources available for individual learning, health care staff may come back to the resource at a time when a specific situation would benefit from a refresher of the information or when a health care staff has more experience and the information is more relevant to their experience.

It is vital that once the learning has occurred that data is collected to evaluate the program. This evaluation should be done by the learners and the facilitator. This will assist in revisions of these environments for other health care staff in different settings. Both formative and summative evaluations serve to assess the continuing competency of the program being offered to the health care staff. This is especially important as there is a gap in research on the effectiveness of learning environments using multimedia in work place settings.

Distance education using multimedia resources is a solution that will allow health care staff to enroll in continuing education sessions without adding stress to their current personal and work demands. It will allow them to participate in environments within their work setting. These types of learning environments can be successfully suited to meet the needs of adult health care learners using principles from the andragogical model and constructivist strategies together with their identified learning needs. Change may be met with resistance when required to develop a competency plan, so simple and flexible solutions involving multimedia resources should be available to alert health care staff that

continuing education will be relevant to their experiences and more importantly it will benefit their personal and professional growth.

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