
Critical Issues Identified by New Members of the Educational Technology Community of Practice

Contributing authors: Donna DesRoches, Darlene Gulas-Bomok, Debi Naigle, Heather Ross, Derek Tannis

Editor: Richard A. Schwier

Educational Communications and Technology
University of Saskatchewan

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New members of a community of practice bring fresh eyes to critical issues facing our discipline. This paper offers five investigations of important questions in educational communication and technology. The papers include professional issues such as professional development for teachers, health care providers and youth volunteers, and media literacy.

These papers were abstracted from a collection of papers prepared for a graduate course in the foundations of educational technology that focus on important, contemporary issues facing educational technology today. They are not intended to provide a unified vision of any discrete set of concerns in our field of study. Rather, they represent a sample of diverse challenges we face, and they provide a cogent and coherent discussion of those issues.

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Media Messages to Adolescent Females

-Debi Naigle-

Abstract

Research shows that media play a dominant role in influencing females' perceptions of the world around them, as well as helping them to define their sense of self. This paper examines the influence that media has on adolescent females' feelings towards their place in society, sexuality, self-esteem and body image. Possible solutions to some of the problems mentioned are also addressed.

Time of Adolescence

Adolescence can be a confusing and unsettling time for young adults. This is a period marked by severe psychological and emotional stresses due to adolescents' increased self-awareness, self-identity, self-consciousness, preoccupation with image, and concern with social acceptance (Durham, 1999; Slater & Tiggemann, 2002). As they are moving from childhood into adulthood, adolescents are trying to discover and solidify their senses of self and their roles in society.

Now while these changes are occurring in both males and females, it has been found that females experience a more difficult time with this transition than males (Block & Robins, 1993). Adolescent girls are more apt to experience decreased feeling of attractiveness and self-esteem.

Adolescence is a time of extreme introspection. And more than their male counterparts, females look to media to help them define and explain the world around them (Polce-Lynch, Myers, Kliever, and Kilmartin, 2001). Females seeking information about their current developmental tasks will take that information from any available source (Granello, 1997). Mass media is one of the main resources to which they turn.

Media

Media is a pervasive and ever present entity in the lives of North Americans. It is a strong influence for constructing meaning in our everyday lives. Social Comparison Theory posits that "people will [at some point in their lives] compare themselves and significant others to people and images whom they perceive to represent realistic goals to attain" (Botta, 1999, p. 26). Adolescents, because they haven't reached the cognitive level to critically analyze and determine reasonable levels of realistic goals, are more vulnerable to media images (Hargreaves & Tiggemann, 2003). Because they tend to see most everything as realistic and attainable, adolescent girls are more likely to emulate the images, both physically and through their actions, portrayed in the media. They look to the media to define how they should look, act, and feel.

Now while adolescents are developing an increased cognitive capacity to process information (Botta, 1999), critical evaluation skills are not fully matured. This is especially true for adolescents in the 13 to 14 year range (Rosenblum & Lewis, 1999). For these early teens, media have a stronger influence on their view of reality than it does on those even two years younger or older.

No one type of media can be held more responsible for the messages presented to adolescent females. Each form of media plays a crucial role in influencing adolescent females in different ways. Although television viewing is related to body dissatisfaction, there are no strong correlations linking this channel of communication to proactive drives for thinness or eating disorder behaviors like there are with magazine consumption (Harrison & Cantor, 1997). And within television viewing, different types of programming are more influential than others (Borzekowski, Robinson, and Killen, 2000; Harrison & Cantor, 1997; Seidemen, 1999). So in order to understand the overall role that media have on female adolescents' perceptions of self and society, all genres must be examined.

Place in Society

More than anything, adolescents want to feel like they belong to, and that they are accepted by, a community. While adolescent males are striving to construct their own sense of individuality, and develop their position in the hierarchy of the world around them, adolescent females are searching for relationships and attempting to build strong networks (Granello, 1997).

Murnen & Smolak (2000) found that television, more than any other form of media, plays an important role in shaping adolescent females' attitudes and views about society and social interactions. However, the images of women shown on television are less than flattering. Television tends to portray women as more passive, dependant and emotional (Vessy, Yim-Chiplis and MacKenzie, 1998; Seidemen 1999). Working women are depicted as less competent, more reactionary, and less reliable than their male colleagues (Murnen & Smolak, 2000). It has also been found that on television soap operas, women are more likely to be acted upon (raped, abandoned, misunderstood) than males (Granello, 1997).

33% of all workplace, situation comedy episodes contained some form of harassment (Montemurro, 2003) Often these actions are presented without being named (Fouts & Burggraf, 2000), giving the impression that they are trivial and dismissible, and worthy of nothing more than a laugh.

Music videos, more than any other genre of television programs, have been found to have the strongest influence over adolescent females when portraying how women should look and behave (Tiggeman, & Pickering, 1996). Borzekowski et al. (2000) found a positive relationship exists between music video viewing and the onset of drinking alcohol, smoking cigarettes, and sexual promiscuity in adolescent females. Music videos portray high levels of tobacco use, and overt violence and weapon carrying (Rich et al, 1998). Eroticism, sexism, and sex role stereotyping are common themes in many music videos (Hansen & Hansen 1988; Tiggeman & Pickering, 1996).

Sexuality

In the past two decades, sexual content on television and in the movies has become more pervasive and explicit. Very seldom are consequences of sexual engagement addressed. And when consequences are included, they are generally limited to physical, rather than emotional or social, consequences (Kunkel, Cope & Biely, 1999). Concerns and preventions of sexually transmitted diseases and pregnancy have only recently started to become addressed.

As well, in an examination of sexual consequences on teen programming, Aubrey (2004) found that there was a double standard with regards to the events that led up to and precipitated a detrimental outcome. She found that “negative consequences were more common in scenes in which female characters initiated sexual activities than in scenes in which males characters initiated sexual activities” (p. 505). 84 episodes of one-hour, prime-time, dramas that contained characters between the ages of 12 to 22 years were examined. It was found that if a male initiated sexual activities, 70% of the time there were no negative consequences. However, if a female initiated sexual activity, 60% of the time there were negative consequences. As well, females were the receivers of these negative consequences 65.7% of the time while males received negative consequences only 34.3% of the time. It was also found that males initiated sexual activity 60.5% of the time. This, along with the messages of perpetual danger from female sexual initiation, perpetuates the stereotype that it is socially normal, acceptable, and even desirable for men to approach sex in a more proactive manner while women should remain more passive and reactive.

Teen magazines also present over-sexualized images and messages. Pierce (1990) found that images in *Seventeen* portrayed girls as being “neurotic, helpless, and timid beings who must rely on external sources, usually men, to make sense of their lives” (p. 372). Evans, Rutberg, Sather, and Turner (1991) found that teen magazines perpetuated the belief that the ability to achieve successful interpersonal interactions occurred through the use of sexualized manipulation. Girls are taught that seductive poses, pouts, and stances are acceptable and necessary ways to be successful and attain fulfillment.

However, teen magazines present a conflicting message. They teach girls the power and persuasiveness of their sexuality, yet at the same time, warn them that they are not to give into, or even acknowledge, their sexual desire (Durham, 1998). Their sexuality is to be used as a manipulative tool, not as a means for social interaction or personal pleasure.

Self Esteem and Body Image

The portrayal of over-glamorized models presented in fashion magazines, television, and movies sends the message that in order for a female to be successful and accepted, she must be attractive and thin.

This is a negative message to send to any female. But it has a more devastating effect for adolescent girls. Because as Pipher (1994) says:

Girls have strong bodies when they enter puberty. But these bodies often soften and spread out in a way that our culture calls fat. Just at the point that their bodies are becoming rounder, girls are told that thin is beautiful, even imperative. (p. 55)

Adolescent females are particularly vulnerable to the thin-promoting messages of the media because they are at a time in their lives when they are seeking outside information to form their self-identity (Botta, 1999). Pipher (1994) found that a negative perception of body image

is positively correlated to a decrease in self-esteem and confidence of adolescent girls. Hargreaves and Tiggemann (2003) where they found that “one brief exposure to 20 images of the thin female ideal (of only about a 10-minute duration) can result in increased body dissatisfaction, and maintain a negative effect for at least 15 minutes after the exposure” (p. 372).

This acceptance of the media’s presentation of the ideal body image can lead to serious, health-harming actions. Some research states that two-thirds of high school females are either currently on a diet or intent to start one (Garner & Kearney-Cooke, 1996). Body dissatisfaction is the single strongest predictor of eating disorder onset (Phelps, Johnston & Augustyniak, 1999). And females who do diet are much more likely than non-dieters to later engage in more health risking behaviors and develop an eating disorder, such as bulimia or anorexia nervosa (Lowe et al, 1996).

Further studies has stated that there is an association between this damaging dieting behavior in women and the messages presented in mass media, especially women’s magazines (Stice, Schupak-Neuberg, Shaw, & Stein, 1994). At least 50% of all teenage girls are regular readers of fashion magazines (Nichter, 2000). A content analysis of Seventeen found that 50% of all editorial copy was dedicated to physical beauty (Pierce, 1990). Thomsen, Webber and Brown (2002), found that there is a positive correlation between the frequency with which high school girls read beauty and fashion magazines and their use of appetite suppressants, skipping two meals a day, intentional vomiting and laxative use. They also suggest that this problem takes on a dangerous, cyclical nature.

Solutions

Research shows that the media can have a strong effect on how adolescent females view and interpret the world around them. Girls are looking to find their place in society and they use the media as a means to help define and explain their roles. Not all messages are positive, appropriate, or advantageous for adolescent girls. Many of the messages presented give adolescent females the impression that they naturally are expected to take a subservient and submissive role to men. The message is often given that women are not meant to be taken seriously. And their outer image and stature is more important than their character and inner strength.

Parents and teachers need to take an active role in helping adolescents understand and interpret the messages portrayed in the media. They need to engage in active, critical viewing to mediate the negative effects of media. Open dialogue can help adolescents gain a better grasp of realistic and attainable goals. As well girls are more likely to make positive choices if they are informed about the dangers associated with attempting to attain unrealistic body images.

Van Evra (1990) found that adolescents who have outside, competing information will be less vulnerable to influencing effects. This is especially true if they are taught to not perceive all incoming information as realistic and attainable. If adolescent do not perceive thin ideals on television as realistic, and they have outside information telling them they do not need to live up to those ideals, they will be less vulnerable to negative effects on body and self image. Open communication and realistic expectations will assist adolescent girls from falling prey to negative media influences.

Resource-based Learning: Teaching Technology Skills in a Constructivist Learning Environment

-Donna DesRoches-

Abstract

Resource-based learning is a constructivist-learning environment where students become active participants in their own learning; collaborate with others to meet their learning needs, and through the use of a wide variety of resources piece together information to construct their own meaningful understanding about a subject.

This paper will illustrate how the use of one of the three current manifestations of resource-based learning, inquiry-based learning, problem-based learning and project-based learning facilitates the effective integration of technology skills. These resource-based learning environments place the student at the center of the learning process where through collaboration and using technology to solve real-world problems they become information literate citizens.

Introduction

The vast technological changes that have occurred over the past decade are forcing educators to rethink the concept of information literacy and its place in the classroom. Not only is information growing exponentially but also the ways to access it are constantly changing causing information seeking to become increasingly complicated and challenging. Information technology is affecting the way in which we operate in the world and the ways in which we interact with each other. An individual's ability to survive socially and economically in the world is becoming dependent on his or her ability to use technology to effectively to find, process and share information. These societal changes are having an impact on teaching and learning. "Because we have been hit by a tidal wave of information, what used to suffice as literacy no longer suffices; what used to count as effective knowledge no longer meets our needs; what used to pass as a good education no longer is adequate"(American Library Association [ALA], 1989)." Pedagogy in today's information-rich world must undergo a transformation that will place students at the centre of the learning process and facilitate a means by which they become confident users of information. If this educational transformation is to occur, teachers must be provided with a framework from which to deliver the quality of education students in the 21st century require. In 1989 the American Library Association placed information literacy on the educational agenda when it released the Presidential Committee on Information Literacy: Final Report. The report stated that to be information literate, "a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information."

Constructivist learning environments such as resource-based learning with its emphasis on the learner, a resource-rich environment and information problem-solving strategies, is the

framework in which technology skills can be seamlessly integrated for the education of information literate citizens.

Information Literacy

Technology skills taught in isolation do not facilitate student's application of these skills in meaningful ways and there is little transfer of skills to other learning situations. Information literate students accomplish more than a checklist of skills. They understand when and why to use technology and not just how to use it. They are able to use technology flexibly, creatively and purposefully, selecting to use a computer because it meets their learning needs. Information literate individuals are critical users of information; able to formulate questions, find pertinent sources, evaluate what they find, determine its relevance, organize and process the information and lastly, share the information in an appropriate format. "Information literacy implies the skills of critical thinking, competency in using computers and other information technologies, as well as accessing and using information" (Doyle, 2000).

The Canadian School Library Association (2003) established the following competencies of an information literate citizen:

- Works independently and collaboratively to solve problems
- Analyzes information critically in all its formats in all media contexts
- Applies information strategically to solve personal social problems
- Makes decisions based on accurate and current information
- Uses information and communication technologies
- Respects information sources and diverse perspectives
- Honours intellectual property and privacy rights
- Appreciates the aesthetic qualities of various creative and scientific expressions
- Communicates effectively and expressively using a variety of information and media formats.

An information literate citizen of the 21st century is an individual who is capable of successfully navigating an information-rich world. Schools must be prepared to help students acquire the skills that will allow them to critically search, evaluate and select materials to solve their "information problems" (Eisenberg, Lowe & Spitzer, 2004). Skills must be integrated with core curriculum to provide students with opportunities to work with information technology in a way that is meaningful to their learning. In doing so students not only demonstrate more confident information problem solving skills but have better mastery of the core curriculum as well. (Doyle, 2000). Research studies (Haycock, 1997; Todd, 1995) show that integrated information skills instruction has a significant effect on student mastery of content: "Students learn more and produce better research products following planned, integrated information skills instruction by the teacher and teacher-librarian" (Haycock, 1997).

Resource-based Learning

Resource-based learning meets the demand for education in the information age to be student centered. In the 21st century the focus of curricula cannot be solely on content because it can no longer be assumed that teachers are able to transmit all the significant information that students will require for day-to-day existence. Instead, students must leave school with the capacity to continue to learn: to ask key questions, to find appropriate information and to share what they find. In other words, our students must become critical and creative information problem solvers. This can be accomplished by allowing students to take greater responsibility for their own learning, providing resource-rich environments and by utilizing information processing models for students to use. It is in these constructivist-learning environments that information literacy can be nurtured.

Since the mid 1990's resource-based learning has found its precepts expressed in the literature about open-ended learning environments (OELE). OELE's are technology-based environments that follow constructivist assumptions: the learner assumes primary responsibility for learning by asking relevant questions; pursuing the required knowledge; and evaluating the learning experience. (Hannafin, Hill & Land, 1997). In open-ended learning environments student thinking originates not from reading a textbook or listening to a lecture, but from personal and practical experiences that are based on real-world problems. The teacher facilitates the learning process providing support for students as they engage in the information problem: guiding rather than telling them what they need to know and modeling problem solving and open-ended environment use. (Hannafin, Hill & Land, 1997).

Open-ended learning environments, as in resource-based learning, place substantive emphasis on using resources to structure and resolve problems and on teacher and tool-based scaffolds to assist student learning. In OELE's, there is also a focus on authentic problems to be solved and technology tools to process, manipulate or discuss information. Students tackle problems that are meaningful and relevant and through using a wide variety of technology-based tools to probe, process and manipulate the information develop a deeper understanding and appreciation for the complexity of the problem.

Open-ended learning environments take the student-centered concept of resource-based learning beyond student selection of a wide variety of resources, to the immersion of students in technology-rich, problem-based experiences. Open-ended learning environments have recently appeared in three different guises; project-based learning, inquiry-based learning and problem-based learning.

There are more similarities than differences among these three manifestations of resource-based learning but each has a key emphasis making it unique from the others. Each methodology advocates real-life problems to motivate and stimulate student curiosity; that students take ownership of their learning, the teacher as a coach or facilitator; and the use of scaffolding tools such as an information problem solving model to support students in their research and to provide them with the metacognitive tools to reflect on the learning process.

RBL: Inquiry-based Learning

The key emphasis in inquiry-based learning is on student questioning. Faced with an authentic problem students begin with asking questions about the topic being studied (Kuhlthau, 2003). Students are guided through inquiry by asking:

- What do I already know?
- What questions do I have?
- How do I find out?
- What did I learn?

These questions, gleaned from the students' natural curiosity, guide the research process leading students to find information from which they create their own knowledge and understanding about the topic. When students find answers to their own questions, their motivation and ownership is increased. Instructors act more as coaches, guides, and facilitators who help learners arrive at their "true" questions—the things they really care about. (An Introduction to Inquiry-based Learning, 2003). Technology plays an important role in supporting inquiry-based learning but the most important technology of all is “the ability of students to make meaning by applying sharply honed questioning skills” (McKenzie, 2003). Being able to ask the good questions guides student’s use of information technologies to find the answers to satisfy their curiosity, to critically evaluate the information they find and to build new understandings, meaning and knowledge. (Alberta Learning, 2004).

RBL: Problem-based Learning

The driving force behind problem-based learning is the ill-structured, messy problem matching the complexities of real life. Problem-based learning stems from the belief that the purpose of education is to teach students to solve problems because the “non-school world (everyday life, business, hobbies, organizations) demands competent problem solvers” (Jonassen, 2003, p. 20). Schools usually ask students to solve well-structured problems such as story problems, which require a finite number of concepts, rules, and principles to be applied to a constrained problem situation. (Jonassen, 2003). In these situations students only grasp the surface elements of the problem and do not form a conceptual understanding of the problem. Thus, they are unable to transfer their problem solving skills to other problems which are ill-structured, messy and with solutions that are not predictable and convergent. (Jonassen, 2003). The process in problem-based learning mirrors the learning process required of learners when they encounter problems in their lives and careers. The problems students are posed often lack clarity, do not have a set formula to follow, change with new information and have many different solutions that can be reached. To solve the problem students need to accept uncertainty, make judgments and express personal opinions and beliefs.

Well Structured Problems	Ill-Structured Problems
All elements are presented	Minimum elements
Students utilize a minimum number of rules and principles	Multiple criteria for evaluating solutions
Rules and principles organized in a predictive way	Unstated constraints
Process leads to correct, convergent answers	Vaguely defined and unclear goals
Preferred, prescribed solution process	Many alternative solutions

(Jonassen, 2003, p. 21)

Technology is a key component of problem-based learning, as students must have access to a wide variety of resources and the skills to be able to find, use and share the information necessary for solving an ill-structured problem.

RBL: Project-based Learning

At first glance project-based learning might appear to resemble problem-based learning; however, there are major differences between the two. The motivating factor in project-based learning is the end product that elaborates and shapes the production process (Esch, 1998). Students are given a clearly stated problem that requires a specific set of conclusions or a solution that directly responds to the problem. On its website, Project-based Learning, the Buck Institute for Education defines project-based learning as “ a systemic teaching method that engages students in learning knowledge and skills through an extended inquiry process structured around complex authentic questions and a carefully designed products and tasks”. Esch, (1998) outlines the production model steps which students following in project based learning:

- Define a purpose for the end product and identify the audience
- Research, design and project plan
- Start project, resolve problems and issues that arise in production
- Use or present the project
- Reflect on and evaluate the process and the project

The production process and the end product in project-based learning engage students in doing rather than passively receiving knowledge thus allowing them to create their own knowledge.

Conclusion

Inquiry-based learning, problem-based learning and project-based learning all reflect the principles of resource-based learning and its current manifestation as open-ended learning environments. Learning is established within a curricular context, it is student centered, problems have a real-world connection and technology is an integral part of the information problem-solving model.

Schools must be able to educate citizens to cope with the changing nature of information and the tools that are used to access, process and share it. Technology skills alone will not create information literate citizens nor does it have the ability to transform teaching and learning but as technology becomes an invisible tool to navigate the information-rich world learners can be empowered to utilize it effectively to meet their information needs.

Resource-based learning environments allow for the integration of technology into day-to-day teaching and learning in ways that vastly impact student ability to solve their information problems. Skills are integrated within the complexity of real-world problems allowing students to effectively utilize a wide variety of resources to meet their information needs. Students are required to take ownership for their own learning by acknowledging individual interests and abilities and by encouraging collaborative sharing and testing of ideas and opinions.

Resource-based learning is the framework in which teachers can change the educational focus from teaching computer skills in isolation to using technology critically and creatively to solve information problems. In the process students become information literate citizens capable of surviving and thriving in an information-rich world.

Challenges and Benefits of ICT for Youth Participation in the Non-Profit Sector

-Derek Tannis-

“The Nexters will be our best educated generation ever, and they will probably continue their education well into adulthood to keep up with rapidly changing technology. Add to this formula their ability to use technology in unforeseen ways, and they seem uniquely poised to become the workforce everyone has been looking for”

- Generations at work, Zemke, Raines & Filipczak

Abstract

This paper considers the challenges and potential benefits that advances in information and communications technology (ICT) and increased youth participation bring to the non-profit sector. Considering the educational nature of youth participation, strategic integration of ICT is considered to be a question relevant to instructional design and technology (IDT). Activity theory and social constructivism are used to provide theoretical foundations for activity-centered and youth-centered IDT approaches. Areas for future research are also considered.

Introduction and Objectives

The non-profit sector is undergoing significant change: 68% of Canadian non-profit organizations use their website strategically (Leverus, 2000), and meaningful youth participation among the Nexters (aged 18-25) is considered a best practice (Wheeler, 2000). Since research in youth service is consistent in its appraisal of meaningful youth participation as an educational endeavour technology strategies aimed at youth participation should draw from the field of instructional design and technology (IDT).

An activity-centered perspective

Activity-centered design makes sense for the non-profit sector, as the integration of ICT can propose “radical” transformations of embedded organizational practices (Burt & Taylor, 2001, p.316). The integration of new technology affects other changes for “[t]echnologies alter the activity and are, in turn, altered by the activity” (Jonassen, Hernandez-Serrano, & Choi, 2000). This includes the roles and intentions of those involved, and the rule governing and results of the activity (Jonassen & Rohrer-Murphy, 1999, p.62). This is an iterative process, created by the need to stabilize a disrupted or contradicted activity that is undergoing innovative change (Engeström, 1999). The following section analyzes what these transformations are by looking

at the disruptions and the stabilizing practices caused by increased ICT and youth participation.

Disruptions and contradictions

- **Increased demands on resources.** Leaders in the non-profit sector argue that they do not have the necessary financial capital for ICT (IM/IT Secretariat, 2002). Untrained staff, lack of time, and inadequate support from boards and funding agencies are other challenges (PRA Inc., 2001). Youth initiatives also require an allocation of resources (Volunteer Canada, 2001).
- **Tension between centralized and distributed governance.** Technology creates tensions between centralized and distributed governance (Burt & Taylor, 2001). Youth-involved strategies also require applying new value-based behaviours (Jarvis, Shear, & Hughes, 1997). Few non-profit organizations are prepared for the power-sharing and role-shifting required of meaningful youth participation (O'Donoghue, Kirshner, & McLaughlin, 2002).
- **Pressure to be more competitive.** Competition between the profit and non-profit sectors has increased (Kellogg Foundation, 2000; Te'eni & Young, 2003). A common reaction to this is for non-profit organizations to be tempted into "organizational empire building" (Wheeler, 2000, p.52), a contrary force to the missions of most non-profit organizations.

Stabilizations and solutions

- **Creation of inter-organizational networks.** Inter-organizational networking, resource and cost sharing are considered key to ICT integration (Kellogg Foundation, 2000; PRA Inc., 2001). Wheeler (2000) states that organizations are valued by their "collaborations, connections, capacity, and contribution to the common good, rather than by its resources or client base" (p. 51).
- **Increased intra-organizational collaboration.** ICT increases the capacity for information and knowledge sharing between staff, volunteers, and colleagues (Murray & Harrison, 2002). Intra-organizational collaboration also involves treating youth as a source of "fresh and energetic perspectives" who often have "outstanding technology skills" (Volunteer Canada, 2001, p.12).
- **Innovations in program efficiency and reach.** ICT integration and youth participation enable innovations in program efficiency and reach, such as coordinating online volunteer matching (Kellogg Foundation, 2000). Youth contribute to community wellbeing and, through involvement, they learn inter-personal and employability skills (Sherman, 2002; Twiss & Cooper, 2000).

A youth-centered perspective

Youth-focused IDT in the non-profit sector needs to support youth in learning and committing to organizational tasks, and helping their psycho-social development. Thus social constructivism can assist this investigation, as it theorizes how learners construct knowledge in groups using shared tools, and common language, rules and conduct (Davis, Sumara, & Luce-Keppler, 2000).

Common themes

- **Multiple representations.** Research indicates that youth participation is influenced by diverse factors (Wilson & Musick, 1997) and that motivations behind volunteer

engagement are changeable across time (Batson, Ahmad, & Tsang, 2002). Social constructivism also addresses these issues by treating learning environments as being shaped by the learners' experiences and knowledge of the subject matter and by diverse learning styles (Richardson, 2003).

- **Learning in context.** Youth engagement is considered a way for youth to present their talents, apply their cognitive skills (Twiss & Cooper, 2000). Involvement in decision making enables youth to develop initiative and a "language of agency" (Larson, 2000). These concepts are reflected in the principle of social constructivism that states learning is best facilitated through contextually-based, ill-structured problems (Jonassen & Rohrer-Murphy, 1999).
- **Interpersonal communication.** Youth engagement in community-based activity promotes strong interpersonal and leadership skills (Dworking, Larson, & Hansen, 2002), and the development of "agency" and "communion" (Jones & Abes, 2004; Magolda, 2000). This is also a component of social constructivist learning theory, wherein meaning making is considered a shared, dialogical process (Jonassen et al., 2000).
- **Self-reflection.** Meaningful youth participation impacts a youth's civic identity, sense of social justice and long term commitment to civic engagement (Youniss et al., 1999). Youth are able to reflect upon and assert their capacity to affect their world (Bentley, 1998). Social constructivism would describe this as learning that "involves wilful, intentional, active, conscious, constructive practice that includes reciprocal intention-action-reflection cycles" (Jonassen et al., 2000, p.111).

Conclusion

ICT needs to be part of an organization's broader youth participation strategy. It is crucial that researchers in IDT give the non-profit sector the same attention they do to formal education and for-profit training settings. Together, researchers in IDT and in the non-profit sector could work towards conceptualizing a technology strategy that pursues the broader mission of increasing youth participation across organizations, including school-community partnerships.

Professional Development for Late Career Teachers: The Promise of Virtual Learning Communities

-Darlene Gulas-Bomok-

Abstract

Michael Huberman's (1989) cycles of conflict/resolution in a teacher's career that contribute to growth and development and how virtual learning communities can enhance that process within the theoretical framework of situated cognition will provide the foundation for this study. Recognizing that teachers participate in a variety of communities of practice and that group dynamics and individual intrinsic motivation are contributing factors, this paper will address late career teachers specifically. Huberman illustrates that teachers have different needs as they progress through five career cycles and advocates targeted professional development needs at each stage. The premise is that virtual learning communities can provide "just-in-time" professional input especially for teachers in the final three cycles labelled as serenity and distancing, conservatism and regret and disengagement. The hypothesis is that virtual learning communities may enable teachers to develop or maintain multiple active trajectories within an outbound trajectory.

Introduction

Even though the World Wide Web is now a ubiquitous learning tool, a transition generation of late career teachers may simply be coping with but not integrating technology into their personal and professional lives. They are products of their pre-computer-mediated-educational histories. There will always be a passionate few devouring the latest in computer-assisted technology at one end of the continuum and those who absolutely refuse to incorporate technology into their lives at the other. The remainder learn as need arises and somehow manage with or without support. In this milieu, advocating virtual learning communities to an apprehensive audience is the mandate of the converted and may not always be well received. Yet it is an easy and non-threatening opportunity for teachers; someone just needs to make the introduction.

This paper utilizes the theoretical framework of situated cognition (Lave & Wenger, 1991) and a "professional life cycle" model (Huberman, 1989) to present the proposal that virtual learning communities can augment the personal and professional development of late career teachers. A variety of professional development strategies are necessary to target specific requirements at each stage of the life cycle. Being analogous to successful models of face-to-face grouping in traditional professional development, virtual communities of practice may effectively make inroads in the personal and professional growth of late career teachers.

Late Career Teacher Stages

Michael Huberman, in his Swiss study, characterizes late career teachers as becoming increasingly disengaged in the final stages of their professional lives. Recognizing that teachers participate in a variety of communities of practice and that group dynamics and individual intrinsic motivation are contributing factors, his cycles of conflict and resolution in a teacher's career reveal that teachers have different needs as they progress through five specific career cycles. The following are descriptions of the last three late career development stages and their associated emotional dispositions. (Huberman, 1989)

1. Serenity and Distancing - Teachers with many years of experience are usually comfortable with classroom life and their role in it. Dependent upon the individual, this can manifest itself in mid-career. Huberman proposed, "a gradual loss in energy and enthusiasm is compensated for by a greater sense of confidence and self-acceptance". (1989, p. 35) Teachers begin to distance themselves from the students, launching the process of disengagement.
2. Conservatism and Regret - This stage is characterized as one of "increasingly greater prudence, greater resistance to innovation, greater nostalgia for the past, and more concern with holding on to what one has than with getting what one wants." (1989, p. 36) Emotional reflection around regret surface, particularly if the teacher has not had a satisfying career.
3. Disengagement - As teachers approach retirement, they begin to focus on their lives beyond the classroom, and to distance themselves emotionally from their students and their work.

A direct linear progression through career stages is not often the norm. For the most part, teachers will experience disturbances that will cause movement back and forth between growth and frustration within career stages. Ralph Fessler (1995) postulated that teachers will move in and out of stages "in response to environmental influences from both the personal and organizational dimensions". (p. 187)

Late career teachers, with many years of experience reach a comfort level in their classrooms that Huberman (1989) described as serenity, beginning the disengagement process. Disengagement, at worst, manifests itself as regret with an entire career and an apathetic attempt to tolerate a perceived negative environment until retirement. (Day & Sachs, 2000, pp. 11-12)

At best, these senior teachers may be actively contemplating post-retirement activities thereby moving contentedly towards career end. Day and Sachs (2000) created a rather grim character sketch of the disenchanting mid- to late-career teacher as marginalized and apathetic, "no longer holding the good of their pupils as a high priority". (p. 11) Low self-esteem is directly correlated to the disengagement process. In keeping with the conservatism theme, such late career teachers tend to be more negative than positive about change. Self-reflection may lead them to conclude that their entire careers, encompassing their efforts, expertise and time, appear to be dissolving or standing still because there is no further job-related mobility. Self-chosen isolation may ensue with no particular interest in professional development, particularly technology.

Situated Cognition: Theoretical Framework

When analyzing the use of virtual learning communities by late career teachers, the notion of trajectories helps explain the conflicting roles experienced. Legitimate peripheral participation within the theoretical context of situated cognition, proposed by Lave & Wenger (1991), provides the theoretical framework to better understand this issue. The premise of situated cognition is that learning occurs from participation in activities, manipulation of artefacts and in relationships with others during a particular time in a specific space (Lave & Wenger, 1991).

Situated cognition views learning as an entry into and progression through a community of practice. “Legitimate peripheral participation . . . concerns the process by which newcomers become part of a community of practice” and old-timers disengage from the community. (Lave & Wenger, 1991, p. 29) There is an assumption that the late career teacher, by virtue of age and experience takes on the insider role of expert in a particular area of teaching. However, as technology has infiltrated the learning environment, many senior teachers may have not embraced its inherently valuable possibilities. Subsequently such individuals may have fallen further behind and become more alienated over the ensuing years. After twenty or more years of school-division emphasis on computer-assisted instruction, old-timers may find themselves in dichotomous roles, one as an insider/expert in subject matter and the other as an inbound/novice/new-comer in computer-assisted instruction. Instead of maintaining respected elder positions, late career teachers, who are also on outbound trajectories, are technological immigrants relying on the younger generation to guide them through seemingly uncharted land.

The late career teacher has multiple trajectories in the overlapping communities of learning including the greater school division employees and colleagues in similar areas. These teachers are simultaneously insiders and novices on inbound and outbound trajectories. This creates role conflict and depending on the disposition of the teacher could further enhance disengagement or motivate the teacher to become more technologically literate.

If the ‘old dog’ does not want to learn “new tricks”, insofar as one’s teaching goes, perhaps involvement in virtual learning communities can rejuvenate late career teachers and provide alternatives for a productive retirement or even second career. As Lave and Wenger (1991) postulated, it is possible that they become more active and engaged within the culture and may, in fact, assume the role of expert or old-timer. Then again, some late career teachers may never move from novice capabilities in the technological community of practice.

Late Career Teachers and an Overview of Technology in the Schools

Although, technology is no longer an optional strategy, it is still handled in this way by some school divisions and perceived as such by some teachers. Day and Sachs (2000) present a contentious issue: “The circumstances in which teachers work and the demands made upon them are changing as communication technologies erode the role of the teacher as exclusive holder of expert knowledge”. (p. 5) This reverberates for late career teachers. That statement might be better changed to ‘communication technologies enhance the role of the teacher as one of many facilitators of knowledge’.

School divisions have mandated technological literacy for Kindergarten to Grade 12 over the past number of years, yet many teachers still feel unqualified to incorporate computer-assisted learning in their classrooms. From my own experiences I have surmised that one of the barriers to acceptance may have arisen from the original introduction of computers into the educational system. 'Computers' were initiated as a 'subject' rather than the technologically advanced tools that they were and are. The pen is not a subject; books are not subjects; yet the computer, which transcends writing implements and information resources, was introduced as a subject requiring the interpretation of an expert instructor. For the late career teachers, who never had used the computer as a tool in their schooling or training and who were introduced to technology as a subject that was taught by a computer expert, a mythic and seemingly unattainable academic discipline was created. Revision of that original perception of expert discipline to one that treats the computer as a tool began with required record keeping and online communication.

Computer-assisted record keeping for reporting and board or district developed organization of interschool communication services, are well-established in most school divisions. As a result, most teachers have had to acquire basic computer skills to accomplish recording of marks, completing report cards and opening and responding to central office e-mail announcements. An administration, having chosen computer-generated report cards for the school or communication via e-mail, often does not offer teachers any alternatives. Irrespective of personal feelings and reactions, those skills are learned as need arises.

Incorporating computer-mediated instructional strategies are also relative to the teacher's needs and previous experience. Word-processing software is the most commonly used software among those teachers who have integrated computers into their teaching (Marra, 2004, Literature sub-heading, paragraph 2). A possible explanation is that teachers are only introducing as much to their students as they have experienced themselves. If teachers have been exposed to a "situated" learning environment of online communities and a variety of software in their disciplines, they may more likely share and learn along with their students.

Virtual Learning Communities as *Anytime, Anywhere* Professional Development

"Ten more years until retirement. I've paid my dues—and I'll continue to do my job. But—don't expect me to be a cheerleader for change". (Fessler, 1995, p. 171) By the late career stages, many teachers may not wish for or see any need to change their teaching styles and strategies. They perceive themselves as insiders, old-timers and "experts" in their niche. They appear comfortable, satisfied and have established a persona on the campus so that they may not even see a need to take part in any professional development. "Been there, done that" is a popular adage among teachers in these final stages. On the other end of the continuum is the teacher who continues to update methods and strategies, acts as a motivating mentor for novices and anticipates retirement with melancholy. Professional development, therefore, needs to address both these transitional roles for teachers in an outbound trajectory.

The 1989 Learning Technology Leadership Conference panellists' recommendations are sixteen years old; however, their conclusion that "teachers need training for life skills, not simply technology skills" (Bruder, 1989, p. 1) is particularly significant when interpreted as technology skills that need to be perceived and viewed as life skills. Professional development facilitators might be wise to use technology for life skills as the "hook" or motivating factor for

late career teachers to use technology in their classrooms. It is essential to have teachers realize that technology is or will be worthwhile in their everyday and professional lives.

As has been previously stated, the most effective professional development experiences will target specific needs at each stage and enhance effective teaching that improves learning for students. If disengagement includes apathy and a lack of intrinsic motivation, school division organizers for professional development will be hard-pressed to motivate those teachers on outbound trajectories. The teachers, who have enjoyed a well-balanced career, probably have worked in school environments that encourage and support trial-and-error without threat of 'losing face'. This group would have the greatest potential as the target audience for online professional development.

Sue Amunrud, the Acting Executive Director of the e-learning Branch for SaskLearning (Saskatchewan, Canada) likened technological competency of Saskatchewan teachers to the commonplace use of the telephone. " Her belief is that computer technology should be invisible. It should be like the telephone — at our fingertips when you want and need it — using it without thinking about it. " (DesRoches, 2005) School divisions have responded to the necessity of hardware in every classroom, but the question still remains, how efficiently and effectively is the hardware being used?

In this environment of technological deficiency, proposing online communities seems detached from reality. At the very least, teachers need to be introduced to the option of virtual learning communities. Teacher awareness of online communities should be a requirement in any professional development format featuring computer-assisted instruction. In the same way that bibliographies attached to curriculum is an expected resource for teachers, a list of online communities that would benefit teachers needs to supplement professional development literature. If teachers become familiar with the concept of VLCs, eventually demystification will take place and online professional development communities may become an alternative.

Conclusion

Transition is an uncomfortable position in an obvious change environment. It is easily said in retrospect, that computer-mediated instruction and communication tools have not been as well integrated into daily instruction as perhaps anticipated twenty-some years ago when the first Commodore 64s were purchased by school divisions. The last of the 'transition' generation of teachers are now late career teachers and still the lament goes on that teachers are not technologically literate. This paper attempted to present the value of virtual learning communities for the late career teacher; however nothing written here will change those who have no intrinsic motivation to include technology in their personal or professional lives.

Motivation comes from need. In late career, many teachers simply do not see the need to incorporate online communities into their lives. What late career teachers have to recognize is that they will soon be retiring and they will be left further behind, technologically. School divisions need to employ a strategy of 'catch-up'. A technology-related needs assessment of late career teachers needs to be done and appropriate professional development needs to be continued in order to make the last stages of their careers more motivating for them and their students.

A breakthrough will only occur when administrators and late career teachers recognize that technology skills (like acquired reading and writing skills) are necessary everyday life skills

that late career teachers missed out on in their own elementary and secondary school lives and teacher training. Participation in a virtual learning community is one tool that may inspire teachers late in their careers.

The Use of Technology in Education and Professional Development for Health Care Providers

-Heather M. Ross-

Abstract

Continuing professional development (CPD) has become increasingly important as more businesses and organizations recognize the importance of life-long learning and its role in decreasing mishaps and increasing productivity. One field that has long required its members to take part in CPD is health care. Both physicians and nurses must engage in CPD on a regular basis to maintain their skills and increase their knowledge of new research. Technology plays a growing role in both pre-clinical education and post-clinical CPD.

This paper provides an overview of how technology is being used for education and professional development among health care providers with the purpose of determining what is currently being done and what areas can be improved upon and expanded. The paper is organized into four sections. Section one addresses the current requirements for professional development among health care providers in Canada. Section two looks at how technology is being used for education and professional development among health care providers. Section three explores some of the barriers to health care providers utilizing technology for these purposes. The paper concludes with a brief look at what areas can be improved and expanded to better assist health care providers.

Professional Development For Health Care Providers

Every year, physicians and nurses complete the majority of their CPD hours by attending conferences, but attendance can prove to be a hardship for many due to location, practice load, and shift schedules. In addition, attendance at conferences is not a good way to ensure long-term retention of knowledge. Picciano, et al. (2003) found that residents who attended mid-day conferences, a common practice in medical education, showed no greater retention of knowledge over a long period of time than their counterparts who did not attend the conference series.

Technology, Education, and CPD For Health Care Providers

Medical schools, teaching hospitals, and professional associations have been making use of technologies to aid in the training and upgrading of skills of both pre-clinical and post-clinical health care providers. The use of technology provides the opportunity for self-directed,

problem-based learning, involving collaboration, elements often missing from traditional methods of education and professional development. These programs are making use of these technologies for on-site training, as well as at a distance.

On-Site Use of Technology

Just-in-time education, a concept first developed by the business sector is becoming more popular in many fields, including health care. With just-in-time education, the learner learns what they need to know, when they need to know it, and often in the context in which it will be used (Sambataro, 2000). Knowledge that is obtained by a physician, nurse, or student where they are treating patients, is more likely to be remembered by the learner (Nissen, Abdulla, Khandheria, Kienzle & Zaher, 2004). In addition, making learning resources such as databases or journals available for health care providers to easily access them when needed will also help them gain just-in-time knowledge required when treating patients.

The Internet. The Internet has proven to be a valuable tool for physicians and nurses. They use it to look up journal articles and communicate with colleagues. By providing physicians and nurses with access to the Internet at the hospitals they work in, they are given the opportunity for day-to-day professional development that they might not otherwise have. For example, nurses often work shifts that may prevent them from using the Internet in libraries and they may not have the necessary permissions to access journals from home (Tod, Harrison, Docker, Black & Wolstenholme, 2003). If they have Internet access at their work, which they can access before, during, or after their shift, then they can make better use of this technology to aid in patient care and to further their own training. Tod's study also found that the nurses who used the Internet at the hospital were more likely to share information and provide assistance to their colleagues than if they had used computers at home or in the library.

Personal digital assistants. Desktop computers or even laptops with Internet access are too bulky to carry around from patient to patient, and cost may limit the number of these computers that one facility can afford. Personal Digital Assistants (PDAs) offer many of the same features at a fraction of the size, and price. PDAs with medical related software installed provide physicians, nurses and students with information when and where they need it, including information on specific patients, research, and drugs (Bakken, et al., 2004; De Groote & Doranski, 2004). By having this information at the ready, health care providers can save time and be better prepared for treating patients. But PDAs are also playing a role in education and professional development for physicians and nurses.

In a review of the literature by Torre and Wright (2003), the authors found PDAs in wide use in medical education. They found that 67% of family residency programs in the United States made use of PDAs and that the most common uses were for logging patient information and as a pocket-sized reference tool. Users are able to download journal articles from websites and databases for reading or referencing from them their PDAs at a later time.

Simulators. Another form of technology that plays a significant role in training physicians and nurses is the simulator. More medical and nursing training programs are making use of these devices in an effort to allow individuals to learn without risk to patients (Vozenilek, et al., 2004; Wong, 2004). Technological simulators may involve only a computer program that allows for interaction with a fictional patient or they may be as extensive as a recreation of an entire human body.

Gunther, Soto & Colman (2002) reported on the use of simulators to train surgeons to perform knee-replacement surgeries. Through a three-dimensional, interactive computer tutorial, physicians can study necessary steps for a total-knee-replacement (TKR). Students are encouraged to go through the tutorial several times to help cement the knowledge. Gunther's study found that those students who completed the tutorial performed better when trying the procedure on a model using real instruments, completing the TKR in less time and with fewer errors than those who had only read the materials on how to do a TKR.

At the other end of the simulator spectrum is the human patient simulator (HPS). Medical schools have been using HPS units for more than twenty years and nursing programs began using them in the past decade (Nehring & Lashley, 2004). These simulators may resemble the models used for first-aid training but include computers that will record how the patients would have responded given the actions of the physician or nurse.

Sin-Man from Laerdal is an example of a HPS. The included software allows for the mannequin to simulate either a child or adult, male or female patient, and allows for a variety of different procedures to be performed under realistic circumstances (Peteani, 2004), including intubations, IV insertion and drug administration, catheterization, along with several other common procedures. (Laerdal, 2005).

Wong (2004) noted that the use of HPS for instruction in anesthesia allows for training in emergency care without risk to patients and provides students and practicing anesthesiologists the opportunity to experience cases that may be rare. The simulator is hooked up to the same monitors and machines that would be used on a actual patient. As the physician, student, or nurse performs a procedure the computer in the HPS recreates what would happen to the patient and sends a signal to the monitors.

Simulators are an excellent way to learn through a problem-based approach. Problem-based learning (PBL) involves presenting the learners with a problem to solve using their prior knowledge, discussions with others, and information they find on their own or that is presented with the problem (Wood, 2004)

Simulators also provide the opportunity for teams of people to train, practice, or be evaluated on how they work as a group (Hammond, 2004). This is crucial since doctors and nurses who work in emergency care or surgery rarely work alone. Training within the work setting, including training with the people who will use the knowledge together on a real patient, will better prepare the learner to utilize this knowledge in a real situation.

It is important to note that while simulators provide excellent training opportunities, they do not fully convey what it is like to treat a living patient. The simulator cannot represent every possible response from an actual patient (Wong, 2004). In addition, the cost of simulators may be prohibitive to many programs. Sin-Man, for example costs about \$30,000, USD (Peteani, 2004). In addition, two separate studies from the University of Toronto such suggest that while students enjoy learning through the use of a simulator and felt an increase in their confidence, they may gain just as much knowledge from watching videos or other methods of learning the material (Gilbert, Hutchison, Cusimano & Regehr, 2000; Morgan, Cleave-Hogg, McIlroy & Devitt, 2002). Both studies recommended further research into the use of simulators, including studying whether simulators result in greater long-term retention.

Education and CPD At a Distance

As mentioned earlier, the Internet is a valuable tool in the education and continuing professional development of health care providers. Examples and benefits of its use on-site have already been discussed, but the fact that the Internet is so portable makes it possible to disseminate information and link colleagues at a distance. There are a number of ways that this can be accomplished, including accessing journals, completing CPD credits online, or communicating with colleagues via synchronous and asynchronous discussion boards or email. This is very important as physicians and nurses in busy practices, rural areas, or who work varying shifts may have difficulty attending traditional courses or conferences. In addition, learning at a distance allows individuals to study at their own pace and when it is convenient for them, whether that is at home after their workday or at work between seeing patients.

Accessing journals online. The Internet has made it possible for health care providers to access the latest relevant journals without having to go to the library or subscribing to a hard copy of the publication. Many medical and nursing journals can be accessed for free through the PubMed website which is run by the U.S. National Institute of Health (NIH). Since 1999 the Canadian Medical Association Journal (CMAJ) has been available online for free. For a fee, subscriptions can be obtained to databases such as Medline or to online editions of individual journals including The Journal of the American Medical Association (JAMA), Lancet, and British Medical Journal, all of which offer the option of full subscriptions or either one day or per article subscriptions. Other journals can be accessed from home or the library if the physician, nurse, or student is affiliated with an institution or organization that offers this service.

Distance Education. The first distance course for nurses involving technology was almost sixty years ago and involved using the telephone for an audio conference system (Armstrong, Gessener & Cooper, 2000). Since then distance education has evolved to include television, email, web-based courses, and discussion boards and can be offered either synchronous or asynchronously. As new technology emerges, the possibilities for providing education at a distance continue to expand.

The Family Medicine Education and Research Network (FERN) in London, Ontario is a network of physicians who communicate via email, discussing issues they face as doctors. In a study including participants of FERN, physicians were presented with some information on a case and asked some questions to consider. They then responded to the questions based on their own knowledge and experience, and by accessing other resources for additional information. Participants engaged in discussions about the case through email. The researchers found that using email for CPD encouraged the physicians to make use of other online resources and make changes to their practice (Marshall, Stewart & Ostbye, 2001). The physicians involved in the study found that using email for CME was very convenient because they did not need to be away from their practices to complete it.

Several medical schools throughout North America now offer some form of continuing education at a distance. These courses may include grand rounds transmitted via video, lectures by way of video on the Internet, online discussions, and other paper activities. Some of these methods of taking part in CPD are available for individuals to complete at home, while others require a set-up at a local hospital or other such facility.

Eleven Canadian universities partnered together to create MDcme.ca, a website offering university accredited continuing medical and continuing nursing education courses. Students

in these courses can complete the work, including participation on asynchronous discussion boards, on their own time within the three to four weeks the course is being offered. The website also includes links to tutorials on e-learning to assist those who are new to the concept.

There are also commercial websites offering web-based CPD for health care providers such as CMEweb.com and eMedicine, which also has a large number of articles and images that can be accessed for free (CME courses cost \$7.50 per hour of course). Government agencies, including the National Institute of Health also offer CME courses through a website. Bernard Sklar, a physician in California runs a website (<http://www.cmelist.com/>) listing online continuing medical education programs throughout the U.S. and Canada. Sklar created the website for his Masters thesis for the Graduate Program in Medical Information Science at the University of California, San Francisco. He continually updates the website to keep the listings current.

Distance CPD, however, does not have to include computer technology if that is not possible or desired. The Diabetes Centre at The Queen Elizabeth Hospital in Adelaide, Australia teamed up with the University of South Australia to produce an education program for physicians and nurses who deal with diabetes care (Hill, 1996). They developed conference-call tutorials to be completed by way of the telephone, much like that early nursing program. The tutorial included companion materials such as readings and independent activities.

Important Elements of Distance Learning There are some key aspects that should be considered in the design of distance education materials. Simply taking a lecture seminar and disseminating it through video or audiotapes, or even a website is not effective distance education.

The materials should be learner-centered. Who the learner will be, what their needs and wants are, and what their prior knowledge of the materials and its method of delivery is must all be taken into account. Barrows and Tamblyn (1980) argue that with learner-centered education the learner is motivated by their own desire to learn the material as opposed to learning it for the approval of others through grades or credits for the course. This is very important in distance education since the learner must be self-directed to complete the material.

Distance education should also involve some form of collaboration or consultation with others. This allows for learners to share knowledge and experiences that may prove beneficial to their own learning as well as their colleagues taking the course. A number of studies have shown that when CPD for health care providers has included either synchronous or asynchronous discussions, the participants have had greater satisfaction with the course and found greater success (Atak & Rankin, 2002; Curran, Hoekman, Gulliver, Landells & Hatcher, 2000 ; Ortega, Burgun, Le Duff & Le Beux, 2003) Some organizations, including the College of Family Physicians of Canada require that distance CPD include some method of discussion.

Barriers to Health Care Providers Using Technology

While using technology for education and professional development offers many opportunities, there are also several barriers to its use. Several studies have looked at this issue, with similar results, showing barriers related to knowledge, access, cost, and security concerns all being impediments to the use of technology for learning.

A lack of knowledge about how to use the technology is a common problem (Evans et al., 2001; Hughes & Pakieser, 1999; Mamary & Charles, 2000). If the learner is unfamiliar with

how to use the computer, how to search the Internet, or how to use the course delivery software they are less likely to use the technology. In addition, a lack of access to the technology may also be an impediment. The learner may have access to a computer but cannot watch the streaming videos because they are using a dial-up connection instead of high-speed. This is another part of knowing the learner. Materials must be designed and presented in a way that the learner can use, but a lack of knowledge about how to use the technology on the part of the learner, should not deter the offering of education by way of technology. Marmay and Charles (2003) found that 75% of the physicians they surveyed were interested in receiving training in how to use the Internet and CD-ROM so that they could use them for completing professional development.

Security is another concern among potential learners. Learners worry about protecting their privacy as well as the privacy of their patients while using technology. When learners must use computers in the work place, library, or other setting outside of their home, they have concerns about other people watching what they are doing or some one else accessing what they have been working on after the learner has left the computer (Hughes & Pakieser, 1999). The use of PDAs for tracking patient information, which is done in a number of training programs, can be a danger if a PDA is lost. Proper password protection should be in place to avoid problems in such an occurrence.

Cost can also be a major barrier to the use of technology. Personal digital assistants can cost anywhere from \$100 to more than \$600 (U.S). Many medical and nursing programs require students to buy the units themselves, which may prove to be a hardship. Practicing physicians will more likely be able to afford these. As mentioned earlier simulators can be very expensive, making the cost prohibitive to many programs. Peteani (2004) suggested that a facility could outsource the use of the simulator as a way of recouping some of the cost of purchase. While human-patient simulators can cost tens of thousands of dollars, smaller simulators may be more cost-effective.

What Now?

A recurring theme in most of the literature reviewed for this article was that more research must be done into the effectiveness of using technology for education and continuing professional development in health care. There are many questions that are in need of answers. Does the use of one type technology make learning more effective? What is the impact of using technology for medical and nursing education in terms of long-term retention? What is the most effective way of making these technologies affordable for more users?

Existing research shows that the use of technology for education and professional development is effective. Given this, the next step should be to look towards answering the pending questions and expanding and perfecting its current uses. Emphasis must also be placed on training learners in the use of these technologies. Without this, it will be difficult to encourage broader use of technology in the completion of educational credits and continuing professional development.

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