

Continuing Professional Education in a Rural Context: Does Interactive, Distance Education Meet the Need?

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Abstract

This paper reports the results of an investigation into the use of interactive distance education to meet the need for continuing professional education. Using a mixed-method research design, the study evaluated students' perceptions of learning in distance education courses delivered via interactive audio teleconferencing technology. The investigation revealed that interactive distance education is perceived, by enrolled students, as supporting the development of a community of inquiry and critical thinking skills. However, the extent of this development is related to the instructional design embedded within the course. The implications of using interactive distance education technologies for the delivery of professional development courses are discussed.

Introduction

The increasing speed of technological and social change propels the need for improvements in both the quality and quantity of continuing professional education. These changes result in the need for individuals, corporations and societies to develop "educational cultures" that support continuous retraining, educational opportunity and exposure to new ideas, processes and technologies. This paper reviews the literature on continuing professional education in general, then focusses on CPE in rural locations. The paper then presents the results of an exploratory study designed to enhance understanding of learning in credit level university courses delivered via audio teleconferencing.

Learning Within the Continuing Professional Education Context

[Cervero \(1990, 1994\)](#) has noted that continuing professional education has evolved within a functional model of learning that sees practitioners as highly skilled professionals, applying their specialized knowledge to well-defined practice problems. Within these defined domains, professionals apply knowledge derived from scientific research that is objective, consensual, cumulative and convergent. Cervero argues, however, that most professional activity does not operate in such fashion and models of learning and teaching that are modelled upon a conception of such ordered professional practice are no longer adequate.

For Cervero, the functionalist model of professional training is giving way to one grounded in the "critical viewpoint." This viewpoint is marked by dialectic encounter between the professionals and their working environment. Within this complex environment many sources of knowledge are operational including social, cultural and psychological factors that condition the manner in which professional knowledge is brought to bear on specific problems. Cervero argues that "professionals conduct most of their practice in the swamp of the 'real world,' where problems do not present themselves as well - formed, unambiguous structures but rather as messy, indeterminate situations" ([Cervero, 1990](#) p. 163). He argues that problem setting, rather than problem solving is the key to professional practice. This life "in the swamp" or as we would say in Northern Canada, "life in the bush," expands the competencies of practising professionals but many are hesitant or ill prepared to formally acknowledge and integrate this contextual knowledge in a manner that

leaves it open to critical assessment. Thus it "is as important to help them make explicit this knowledge as to help them to develop new knowledge" (Cervero, 1990 p. 178). This opening of existing knowledge and practice to critical review allows for contemplation, self and group evaluation and leads to improvement in professional practice.

[Garrison \(1991\)](#) outlines the stages of the critical thinking process which underlies successful adult adaptation to complex professional challenges. In this model, Garrison tracks the critical thinking process through five phases of development. [Anderson \(1994\)](#) argues that each of these phases is associated with both an individual and a social development process. Thus, most successful professional education, that is designed to foster the critical perspective amongst students, should contain opportunities for both individual and social growth and development.

The need for professional education is greatest for those professionals practising in isolated communities. For them, opportunities for professional, educational and personal contact are reduced as compared to those who benefit from proximity to fellow professionals. Thus, there is need for models of educational delivery (such as distance education) that are not dependent on physical proximity of students and teacher. These models must, however, be capable of supporting the "critical viewpoint" and the development of "reflection" in practice. To do this, the educational model employed must go well beyond information transmission and facilitate development and growth of knowledge that speaks to the social and cultural reality of the working environment.

It is only through active interaction between and among learners and teacher that meaningful, situated learning can thrive and a community of learners can be created. [Lipman \(1991\)](#) identified characteristics of this type of "community of inquiry" and illustrates the enhancement to individual learning which results from participation in effective communities. Cervero argues that "the educational context must be arranged so that professionals can test, evaluate and modify their existing schemata so that some resolution can be achieved between the learners' knowledge structures and the new one being proposed" ([Cervero 1990](#), p. 166).

To summarize, interaction between and among practising professionals is the cornerstone upon which critical, continuing professional education must be built. The next section traces this need within the specific field of professional development for health care workers.

Continuing Education and Health Care Medical Practitioners

The need for continuing professional education within the health professions is especially acute. Medical research and technological developments continuously inject new information and products into the health care workplace. Larger social and economic factors, including changing health care paradigms, administrative restructuring, and shifts in funding priorities and professional roles create an environment in which continuous learning is essential for professional competence. These change factors create demand for continuous education, training and opportunity for professionals to continuously recreate their professional practices. [Lickman, Simms and Green \(1993\)](#) surveyed 269 practising nurses regarding their attitudes towards their jobs. They isolated a factor, referred to as "excited about their work", which was correlated with job satisfaction, high morale and technical

competency. They found that those nurses who described themselves as excited about their jobs had significantly higher perception of availability of learning opportunities, stimulating, motivating and challenging environments and opportunities to work with other professionals. [Brookfield \(1993\)](#), documented the need for nurses to adopt an attitude of critical thinking towards their practice, if they were to survive under the increasing pressures for change and improvement. He concludes his article by discussing the crucial role of emotionally sustaining peer groups. He writes:

By using a peer learning community as the forum in which stories of critical process can be compared, nurses understand that what they thought were context specific barriers to change, morale-sapping defeats suffered in isolation and incremental fluctuations in energy and commitment, are often paralleled in the lives of colleagues. This awareness, even if it fails to grant insights into how their feelings can be ameliorated or how these barriers can be removed, can be the difference between resolving to work for purposeful change whenever the opportunity arises, and falling prey to a cynical resignation concerning the impossibility of real change. (p.205)

It seems evident that for nurses, and by extension other medical professionals, opportunity to develop a community of supportive professionals is a requirement for successful adaptation to ongoing change.

But how can one create and sustain this professional community when its members are spread across large geographic distances, as is common in most rural communities? This paper argues that the effective use of communications technologies, within a professional education development context, can provide a cost-effective means of creating supportive communities, while meeting the need for effective continuing professional education.

Research Related to Interactive Distance Education in Continuing Professional Education

The continuing professional education literature continues to report studies comparing the effectiveness of various forms of distance education - often in comparison to instruction delivered on campus in more traditional classroom models ([Keck, 1992](#); [Daly, McClelland, & Yang, 1993](#); [Cowell, Kahn & Bahrawy, 1992](#);) The results of these investigations have generally concluded that there are no significant differences in grade scores and other achievement measures between students studying at a distance and those studying on campus. Such media comparison studies are generally flawed by three factors:

1. the inability to compare media directly (the media is the message) ([Salomon & Clark, 1977](#))
2. the difficulty in separating the characteristics of the medium from the activities or instructional design in which it is used ([Clark, 1983](#))
3. the confining nature of the rationalistic assumptions about learning that pervade such comparative studies ([Lea, 1991](#)).

There is need for studies in continuing professional education that look beyond simple outcome comparisons to those which assess the ability of the medium to support and sustain the development of social learning communities and provide opportunities for the development of critical thinking skills ([Garrison, 1991](#)) and

social cognition ([Rogoff, 1990](#)). The following sections outline the results of such an exploratory investigation ([Anderson, 1994](#)).

Objectives of the Investigation

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In order to assess the impact of human interaction, development of a community of inquiry and the opportunity to develop critical thinking skills within a distance education context, the author undertook a mixed-method research study of students enrolled in University level distance education courses. A major component of these courses was the provision of regular audio teleconference classes, at which time students and the instructor were provided with the opportunity, in real time, to engage in a variety of communication, education and social learning activities.

The subjects in the study came from a variety of professional backgrounds, including nursing, but the study was not specifically focused on health professionals. Nonetheless, the results can be used to inform practice and decision making relating to continuing clinical development education.

Specifically the study explored answers to the following questions:

- Do students perceive the teleconferencing context as supportive of [Lipman's \(1991\)](#) "community of inquiry"?
- How does the presence and participation of peers affect learning in the audio teleconference context?
- Do students perceive the teleconferencing context as providing an opportunity to experience and develop critical thinking skills?
- How do distance education students perceive the constraints of time and place which the audio teleconference imposes?
- What is the perceived value of the audio teleconferencing experience in comparison to other human and material support components of the distance education system?

Method

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The investigation took place in two phases. The first phase used descriptive statistics and exploratory factor analysis derived from a survey instrument to identify, define and "map out" students' perception of learning in this distance education context. The second phase of the study used qualitative data (derived from interviews, observations, focus groups and open-ended survey responses) to investigate why, how and under what conditions the teleconference experience contributed to students' perceptions of effective learning.

During the first phase of the investigation, an author-developed survey was mailed to 272 adult students enrolled in distance education courses delivered by two Canadian Universities. The survey was completed and returned by 59% for an n of 160. The subjects were generally part-time learners, most of whom were engaged in full-time employment in a variety of professional activities - notably nursing and teaching. The courses in which the students were enrolled were all university level

credit courses offered at a mix of levels - graduate, undergraduate and graduate certificate level. The survey questions were developed from [Lipman's \(1991\)](#) description of a "community of inquiry" and [Garrison's \(1991\)](#) discussion of the phases of the critical thinking cycle. In addition, questions related to demographic characteristics, experiences of distance education and perceived value of the various components of a distance education course were investigated.

The second phase of the investigation included 18 semi-structured interviews with teleconference students and observations of 12 teleconference classes. Finally, the author mailed a summary sheet of the results of the investigation to interview participants and conducted a focus group and seven individual telephone interviews that were used to confirm conclusions with the participants.

Results

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Instructional Design Models

The major discovery from the observations and interviews and confirmed by post hoc analysis of the survey data, was that the audio teleconference sessions were being used in two distinctive manners, each following a different instructional design model. These instructional design models permeated choice of learning activities, role of participants and goals of the learning process. The choice of instructional design was correlated with large differences in the capacity of the medium to support the development of critical thinking, community of inquiry and other social learning objectives.

The two models are referred to as the "Community of Learners"(COL) and the "Independent Learner Support" (ILS) models. Under a COL model, the teleconference technology is normally used, on a weekly basis, to support discussion, lecture, direct instruction, group activities and project presentations - much as an educational seminar is conducted with face-to-face students on campus. Under an ILS model, the teleconference takes place only once every two to four weeks and serves as optional support, providing a pacing function and limited social learning support. The ILS model provides an opportunity for clarification and discussion of materials that have been presented in individual learning packages. The differences between these models relate to the difference in pedagogy associated with various approaches to formal education and teaching - including continuing professional education. The ILS instructional design model is compatible with the older "Upgrading Model" ([Cervero, 1990](#)) of continuing professional education, in which information, selected and packaged by experts, is delivered for consumption by dispersed learners. The model assumes that course content, encapsulated in the learning package, is correct, current, relevant to the needs of the learners and worthy of study - regardless of the context in which the knowledge is to be practised.

The COL model is more compatible with the developments of [Brookfield's](#) "critical viewpoint" and encourages creation of new knowledge that is integrated within the workplace context of teacher and learners. The following sections detail the differences in perception of learning, by students studying, using the identical technology, but very different instructional design models. *Community of Inquiry*

[Lipman's \(1991\)](#) characterizes a "community of inquiry" as a learning group in which members provide feedback to each other, offer their opinions to each other, question one another's assumptions and engage in cooperative problem solving activities. Survey results showed significant differences between the two groups of audio teleconference learners using MANOVA analysis of all eight community of inquiry variables. (Wilks' criteria $F(8,139) = 2.85, p < .01$)

Data (Table 1) illustrate the mean scores of the two groups on the community of learning variables. The percentage of students reporting perception of opportunity to participate in various components of the community of learning is also revealing. COL students felt that the teleconferences provided them with an opportunity to clarify their ideas by sharing them (77%) and made them feel included in the class (76%). Most of the COL students perceived the audio teleconference as providing opportunity to develop cooperative problem solving (64%) and to support in-depth discussion (68%). The ILS students had a much lower perception of the community of inquiry. Only 39% of the students felt that the audio teleconference provided an opportunity for in-depth discussion and even less felt that the audio teleconference provided feedback from others on their own comments (27%) or provided an opportunity to develop cooperative problem solving techniques (26%). However, a sizable majority of the students (71%) felt that the audio teleconference helped clarify their ideas by listening to other students' comments. Most of the students also felt that the teleconference provided an opportunity for input into course content (55%) and provided feedback related to their learning (66%).

Table 1

Mean Scores on Community of Inquiry Items, Where 5 Indicates Strongly Agree, 1 Strongly Disagree			
Characteristics of Lipman's (1991) Community of Inquiry	COL Mean	ILS Mean	F(1,146)
provided input into material covered	3.17	3.05	32
provided feedback related to my learning	3.69	3.54	70
provided opportunity for in depth discussion	3.62	2.88	13.41 ***
clarified my ideas by sharing them	3.82	3.32	9.31**
clarified my ideas by hearing other students comments	4.01	3.70	3.28
made me feel included in the class	3.90	3.33	10.93**
provided feedback related to what others think about my comments	3.41	2.96	6.90**
provided an opportunity to develop cooperative problem solving	3.52	2.93	11.74**

** $p < .01$, *** $p < .001$

The survey data reveal that the COL students do feel the audio teleconference technology supports the development of a community of inquiry. This community functions without the benefit of nonverbal communication channels used in face-to-face interaction, but it does operate - even when filtered through the teleconferencing medium. The significantly lower perception of the community of inquiry by ILS students illustrates that merely using the technology does not guarantee that a community of inquiry will be created.

Critical Thinking

Subjects were asked to rate their perception of opportunity to engage in 20 activities that are derived from the phases of [Garrison's \(1991\)](#) model of critical thinking. The summary results are displayed in -

Table 2

Percentage of Students Perceiving Opportunity During the Audio Teleconference to Engage in Phases of the Critical Thinking Cycle

Phase of the Critical Thinking Cycle	COL Sample	ILS Sample
Problem Identification	83%	61%
Problem Definition and Clarification	63%	49%
Problem Exploration	75%	56%
Applicability/Evaluation	55%	45%
Knowledge Integration	79%	52%

The results, summarized in Table 2, illustrate that most of the students, in both samples, do perceive the audio teleconference as providing an opportunity for the exercise of critical thinking skills. MANOVA tests of difference between the two sample groups were significant ($F(1,118) = 4.48$ $p < .001$) and subsequent ANOVA tests showed significant differences ($p < .01$) between mean scores on each of the five phases. In every case, the mean score of the COL sample was higher than the ILS sample, indicating greater perception of the opportunity to engage in the development of critical thinking skills. These results provide strong support for the notion that the development of critical thinking skills is perceived as possible, and is experienced by most students enrolled in audio teleconference supported distance education courses. However, again, those studying with a COL instructional design model had higher perceptions of opportunity to develop their critical thinking skills.

Learning Resources

Finally, the survey looked at the value students placed on the various human and material learning resources that were provided by the delivery institution, in support of their learning.

Table 3

**Comparison of COL and ILS Samples on Learning Resources Variables
Score of 5 Signifies Learning Resource is Very Effective and
1 Indicates Learning Resource is Very Ineffective**

Learning Resource or Support	COL Mean	ILS Mean	F(1,138)
Learning Package	3.91	4.23	6.95**
Text	4.11	4.30	5.28*

Audio Teleconference	4.14	3.55	15.17***
Other Students on-site	4.08	3.60	19.40***
Teacher	4.24>	3.77	8.89**
Other students, off-site	3.66	3.29	7.00**
Others, not enrolled in the course	3.37	3.45	0.26
Library staff	3.39	3.53	0.68
Support staff employed by the University	3.75	3.42	4.81*

*p <.05; **p <.01; ***p <.001

MANOVA tests revealed significant differences between the two groups on the set of Learning Resource variables (Wilks' criteria = .7115, $F(9,130) = 5.73$ p <.001). Seven variables showed significant univariate F differences between the populations. The two items related to independent study - text and learning package, showed significantly higher perceived effectiveness ratings by the ILS students. On the five items associated with social learning, the COL students had significantly higher mean scores. There were no significant differences between the two samples on the two items related to others who are not in the course and library staff. These results support the notion that social learning is perceived as a very important component of the learning process by COL students, but valued to a significantly lower extent by ILS students.

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Discussion

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Results of the survey and subsequent interviews suggest that students place high value on the learning that results from interactions with peers - both on-site and off-site, and with the teacher. The most often noted contribution, provided by peer learners and the teacher, was the beneficial effect of additional viewpoints. Most of the students in this study were practising professionals who have practical experiences that they were able to share with the class - thus aiding the development of knowledge and learning during the audio teleconferences. Peers were also valued for their positive effect on motivation and support. Finally, peers contributed to the development of self efficacy. Students regularly mentioned the relief they felt to learn that other students were experiencing similar concerns or problems with content or process during the course.

Often students had trouble explaining exactly how these social interactions worked to enhance their learning, even as they remained convinced of their beneficial contribution. [Schell and Branch \(1993\)](#) argued that conversation, within the instructional process, is a necessary condition that ensures that participants share a common "understanding of each others' knowledge and the specific context in which they find themselves" (p.12). They contend that sharing of unique cultural and cognitive perspective, through conversation, enhances the potential for learner achievement. Data from this study confirm the increase in learner satisfaction and perceived value of the learning experience through these educational conversations.

Social learning is an important component of the audio teleconference experience. Social learning takes place simultaneously among individuals at three levels - among students at the same site (on-site), among students at different sites (off-site) and interactions between students and teacher. Student interaction with other students at the site is important and can help students successfully complete the course by providing a support group, a measuring stick to evaluate individual performance and a sounding board for complaints and frustrations. The local group may also enhance learning by providing a forum to validate new knowledge gained during the course. Considerable evidence from both the surveys and the interviews suggests that other on-site learners provide a uniquely informal learning support system. The effective use of on-site discussion (sidetalk) during the teleconference allows students to affirm or dispute information provided by others, without interrupting the class. This informal communication allows a frankness and level of intimacy that is not supported in any other type of formal, group learning. The ongoing development of the learning community at the site, throughout the length of the course, facilitated a strong sense of group endeavour and support.

Sidetalk is a phenomenon unique to this medium. Its use is considered distracting and disrespectful in a face-to-face classroom. In a similar fashion, it has the potential to distract attention and focus during the audio teleconference. However, it can also serve a very useful, pedagogical function. Sidetalk provides a safe environment in which students can verbalize their thinking thus facilitating the social construction of knowledge. Many students reported that it was more difficult to develop and maintain student support groups with students at other sites (off-site peers). To support this social learning, students must be given opportunity to regularly interact with students at other sites. Knowing and using the names of other students and using techniques to ensure participation, assist in effective social learning with off-site peers. Effective learning interaction can happen between students at different sites, but requires practice and time for participants to become familiar with each other.

The teacher's role is crucial to the success of the teleconference and is influenced by the teachers' ability to provide learning activities appropriate to students needs, manage the discussion and provide information of value to the students. The two instructional design models place different emphasis on the appropriate function of the teacher in a successful teleconference. The COL teacher is free to adopt many teaching strategies and activities that they have seen and used in the face-to-face classroom. Once a level of technical proficiency is achieved by all participants, the teacher can lecture, initiate class discussions, moderate student presentations or facilitate more experimental activities such as online debates, guest audio speakers or panel discussions.

Many ILS teachers conduct teleconferences in a didactic manner, focusing on review and explanation of materials in the text and learning package. Despite the didactic nature of the teaching exchange, ILS teachers were careful to provide opportunities for students to ask questions or otherwise clarify subject matter or administrative concerns.

Students generally perceived the teleconference as a motivating experience. Independent study has long been associated with high attrition rates ([Cookson, 1990](#)) and problems with procrastination ([Wilkinson & Sherman, 1990](#)). The motivation and pacing provided by the audio teleconference session provides a

window of opportunity in which many crucial social and affective components of education can be developed.

Unlike distance education methodologies based upon self-study materials, interactive distance learning normally requires students to attend a learning site on a particular day at a particular time. This temporal and geographical restraint may restrict access by busy professionals, and especially shift workers, as are common in health care professions. The majority of responses to the open-ended survey questions (83%) and interview questions revealed that students appreciate the pacing that accompanies a regularly scheduled teleconference course. The busy life style of many adult learners makes it difficult to allocate blocks of time for reading, study and review ([Wilkinson & Sherman 1990](#)). The scheduled teleconference provides a time when students can leave their home or business and devote time exclusively to the learning process. Both ILS and COL students regularly mentioned the value of the teleconference in establishing goals and time-lines by which progress through the course is regulated. The teleconference provides a regular incentive to keep up with course work ([Wells, 1991](#)). A small minority of students reported that the time and place restrictions imposed by the teleconferences limited their ability to participate in the course. As in any educational delivery system, trade-offs must be made between accessibility and the benefits of paced and social learning. The evidence from this investigation shows that most of the students enrolled in these teleconference courses are willing to accept the reduction in access, in exchange, for the benefits of interactive and paced learning.

To summarize, data from the surveys, interviews and observations confirmed that social learning is an important component of continuing professional learning delivered via the audio teleconference context. The type and extent of social learning are greatly influenced by the instructional design employed during the course.

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