Despite the turmoil of a worldwide economic crisis, the health sector remains largely understaffed, and the nursing shortage represents a major issue that jeopardizes graduate nursing education. Access to education remains a challenge, particularly in rural and remote areas. This article reports the process of developing an asynchronous online qualitative research course. This online course was piloted among 16 interdisciplinary students. Participants agreed that experiential learning was useful to understand the intricacies of qualitative research. Within this constructivist approach, students were immersed in real-life experiences, which focused on the development of skills applicable to qualitative research. Based on the findings, we suggest that constructivism and the Four-Component Instructional Design (4C/ID) model—a four-part approach for fostering the development of complex skills—represent valuable ontological and pedagogical approaches that can be used in online courses. Triangulating these two approaches is also congruent with the student-centered philosophy that underpins nursing graduate programs.

Despite the major economic downturn and the unemployment rate that affects the U.S. and Canadian labor sectors, the human resources needs of the health industry continue to grow (American Association of Colleges of Nursing, 2011). In the report, The Future of Nursing: Leading Change, Advancing Health, the Institute of Medicine’s (2010) supports the need to double the number of nurses with doctoral degrees. More than 581,500 nursing positions will be needed until the year 2018 (U.S. Department of Labor, Bureau of Labor Statistics, 2009) to address a national shortage of at least 760,000 nurses (Marquis & Huston, 2011). The Canadian Nurses Association (2011) indicates that Canada will be short almost 60,000 full-time positions by 2022. The widespread shortage of nurses around the world means that more nurses need to be educated (Buerhaus, Auerbach, & Staiger, 2009; Cleary, Barron McBride, McClure, & Reinhard, 2009; Goldman, 2005) and that those nurses currently practicing need to be retained while receiving ongoing education and training (Allen, Ceolin, Ouellette, Plante, & Vaillancourt, 2007). In addition, nursing schools need to be flexible in attracting students residing in rural and remote areas where the nursing shortage will be most acutely felt (American Association of Colleges of Nursing, 2011; Andrews et al., 2005). It is crucial for strategies to be identified that provide access to education.

One such strategy to provide access to education is the implementation of Web-based distance education because it can provide learning opportunities to those who do not have access to traditional nursing education (Skorga, 2002). Technology and globalization are creating opportunities to expand nursing education and offer adult learners the opportunity to study without compromising work life and family responsibilities (Allen & Seaman, as cited in Legg, Adelman, Mueller, & Levitt, 2009). This shift toward online or distributed learning (distance education) is expected to grow over time due to the need to close the geographic distance between educational institutions and work settings (Andrews et al., 2005).

In 2010, at a western Canada university college of nursing, an online, asynchronous course involving experiential learning of qualitative research methods was developed and pilot tested with an interdisciplinary group of graduate students. This article provides an overview of considerations for online distance education and the application of the Four-Component Instructional Design (4C/ID) model—a design approach for teaching complex skills that uses authentic learning tasks, prac-
Barriers to Nursing Education and the Potential of Web-Based Distance Education

Nursing education faces a number of challenges, including geographic factors and a lack of access (Penz et al., 2007), that must be overcome. Time constraints, which result from busy work schedules, inflexible hours, staff shortages, and family responsibilities, also limit opportunities for education (Allen et al., 2007). In addition, financial constraints, including the cost of education and travel to attend class and the lack of paid educational leave, pose substantial barriers. Distance education can meet the needs of those who do not live near universities, who work at regular jobs, and who have family responsibilities (Skorga, 2002). Distance education offers flexibility to adults in the health care field who may choose distance education to balance graduate nursing education with work and family responsibilities (Allen et al., 2007; Ledwell, Andrusyszyn, & Iwasiw, 2006). Distance education is especially significant for ensuring access to health care in rural and remote areas because students can remain in their communities and continue with their professional responsibilities (Udod & Care, 2002).

Web-based distance education has other advantages, such as offering students equal opportunity for participation and access to professors, which may not be the case in traditional classroom settings or when in-class lectures are televised to distance students in other locations (Skorga, 2002). Furthermore, the incorporation of online discussion forums into Web-based courses allows students time to reflect on the course material and participate in ongoing discussions with other students, which has been found to be beneficial to their learning (Ledwell et al., 2006; Udod & Care, 2002). Although there has been research into the process of designing and implementing Web-based courses, little is known about such courses with regard to constructivist approaches that underpin student-centered philosophy and experiential learning.

Constructivist Approach

Despite an increasing number of online programs offered in nursing education, there is a dearth of knowledge on the application of constructivist pedagogical approaches in guiding online educational programs (Legg et al., 2009). Other disciplines, such as education, anthropology, philosophy, psychology, and communication, have applied constructivist pedagogical approaches, but there is a paucity of literature on constructivism in nursing (Hunter, 2008; Lattuca, 2006; Legg et al., 2009). Other than the model of cultural negotiation by Engebretson and Littleton (2001), derived from a constructivist worldview, the advantage of using constructivist approaches in nursing education has yet to be articulated.

The constructivist approach is steeped in ambiguity and tension regarding learning (Windschitl, 2002), and this tension may be associated with the predominance of content-centered and teacher-centered approaches to teaching in nursing (Young & Maxwell, 2007). In addition, student-centered teaching in nursing may be impeded by situational, institutional, and attitudinal obstacles (Care, Russell, Hartig, Murrell, & Gregory, 2007; Jillings, 2007), requiring a paradigm shift from traditional teaching methods as a means to address students’ needs and their learning styles and lived experiences. Young and Maxwell (2007) described the advantages of student-centered teaching in fostering professionalism and accountability in student learners:

Nurse educators who embrace student-centered teaching not only prepare student nurses with the substantive knowledge necessary for competent practice, but also create an environment in which students learn to think critically, practice reflectively, work effectively in groups, and access and use new information to support their practice. (p. 6)

Based on this definition of student-centered teaching, it appears that constructivism represents a valuable paradigm and pedagogical approach to developing online courses within a philosophy of student-centered education.

Constructivism is an ontology that acknowledges multiple socially constructed truths, perspectives, and realities that move beyond the limitations of envisioning a single reality (Guba & Lincoln, 1994). Constructivist pedagogy is “ premised on the belief that learners actively create, interpret, and reorganize knowledge in individual ways” (Windschitl as cited in Legg et al., 2009, p. 65). Legg et al. (2009) suggested that constructivist pedagogy enables students to “reconcile formal instructional experiences with their existing knowledge” (p. 65) in creating an active process of learning. Hunter (2008) argued that educators who embrace a constructivist approach to learning share several assumptions. First, learning represents an active process in which students construct and reconstruct the content to learn. Second, constructivism transforms learning into a process where learners and educators reach negotiated meanings through collaboration and reflection. Finally, a constructivist approach to learning is built on the respect for diverse life experiences among students. Therefore, constructivism can be seen as a valuable ontological and pedagogical approach to developing online or distributed learning experiences within a student-centered philosophy.

Lattuca (2006) asserted that learning is a mediated activity, so that the educator’s role becomes one of a mediator of knowledge. This view of the educator as a knowledge broker is not without having an influence on the choice of teaching methods. In adopting a constructivist approach to teaching and learning, educators must design and develop learning experiences that will support the learners’ quest for information to build on previous knowledge and experiences and solve problems (Huang, 2002). Situation-based, problem-based, case-based, and inquiry-based learning and role-playing thus represent acknowledged constructivist teaching methods (Legg et al., 2009). To design an online course that teaches qualitative research methods to graduate nursing students, a constructivist approach applying the 4C/ID model (van Merriënboer et al., 2002) was chosen and implemented.

Authentic Experience to Foster Complex Learning of Qualitative Research Methods

The practice of qualitative research is complex; therefore, there is no formula to follow, but rather the researcher must use judgment to choose an appropriate approach for a given context.
The challenge for teaching qualitative research, then, is how to develop and foster these complex skills in students. For our online course, the development team incorporated elements of the 4C/ID model. Developed by van Merriënboer et al. (2002), the 4C/ID model is a holistic instructional design model intended to be used for complex learning tasks, particularly those that require the learner to apply the skills in a real-world context. Transfer and retention of learning is improved compared with traditional methods when students develop the integrated skills required for a complex task. Most design models emphasize instruction in relatively simple learning tasks and assume that a large, complex set of interrelated tasks are achievable as the sum of the parts by sequencing a string of simplified, component task procedures until a complex task is captured. However, there is evidence that this does not work, and students struggle when faced with this complex task (van Merriënboer et al., 2002).

Implementation of the 4C/ID Model to Teach Qualitative Research Methods

The 4C/ID model includes four key components. First, learning tasks should be authentic and whole task in nature; students should be applying skills to real-world tasks and learning how to integrate all the parts of a complex task (van Merriënboer et al., 2002). A key, multiple-part assignment for the course was the development of a research proposal. Students followed guidelines used by a provincial research grant agency and developed relevant proposal sections throughout the course. The proposal writing process was broken down into smaller assignments and activities that built on one another. In addition, students engaged in their own topic of interest. For example, students were encouraged to choose a research topic and develop their own research question. The literature appears to support the 4C/ID model as an effective approach for learning complex tasks (van Merriënboer et al., 2002; van Merriënboer, Kirschner, & Kester, 2003). In addition, authentic learning activities (which were a key part of how the course implemented the 4C/ID model) translated well to online settings (Reeves, Herrington, & Oliver, 2002). As stated by van Merriënboer and Kester (2005):

While the 4C/ID model is not specifically developed for the design of multimedia environments for learning, it has important implications for the selection of a mix of suitable educational media as well as the presentation of information and arrangement of practice and feedback. (p. 72)

In creating the course for an online environment, the design team integrated multimedia principles into each of the four components of the 4C/ID model. Van Merriënboer, Bastiaens, and Hoogveld (2004) cautioned that when multimedia are used in the 4C/ID design, it is “more important than ever to provoke deep processing through asking questions, stimulating reflection and promoting discussion” (p. 18). A key strategy for our course involved the use of discussion forums, as they allowed for considerable depth and reflection on the ideas. Discussion was tied to all the other course elements and activities.

Student Response

Evidence exists for the effectiveness of authentic learning (Herrington, Oliver, & Reeves, 2003), and the 4C/ID model has emerged as a system for designing complex learning experiences (van Merriënboer et al., 2002), but very little is known about the resulting paradigm shift toward a constructivist philosophy that is experienced by both learners and facilitators. For students, the traditional imparting of knowledge via lecture format is often more comfortable than having to engage in complex, real-life tasks. A constructivist approach to creating the learning environment requires the student to integrate knowledge to develop the complex skills required of qualitative researchers.

During the pilot run of this course in 2010, the 16 students enrolled were from various disciplines, including nursing, psychology, medicine, and sociology. These students were from several different locations across the province, several held full-time employment, and others had children and busy family lives. The students completed online midterm and final course evaluations, indicating a strong agreement for the valuable learning they had obtained through the course, and most agreed that this learning would be useful to them in their professional careers. The students commented on the practical nature of the course, the learning they had obtained from participating in peer review of each other’s research proposals, and the valuable perspectives obtained from an interdisciplinary approach. The students built a supportive learning community; learning from each other was a significant component and sharing online was more encouraging than in the classroom setting. Although some negative comments included missing the face-to-face interaction of a classroom setting and the amount of independent reading and writing that was required for the course, they were compensated for by the gain in active learning. Another important learning achievement was an understanding of the...
constraints of a research funder’s requirements. Students came away from the course with a well-developed research proposal, which was suitable for submission to their supervisory committee or a funding agency.

**Facilitator Response**

As the course facilitator (L.F.H.), it was difficult to know when to step in, allowing for some confusion and uncertainty to begin a learning process, and when to let the learners gain their own skills and confidence. Students were allowed to learn from each other and not just the course facilitator. It was exciting to see the students grow in their confidence to make methodological decisions and gain valuable skills as scholars and researchers. Based on a constructivist approach, the online environment encouraged a level playing field where all voices were encouraged and heard in the discussions. For instance, students had time to compose responses and were frequently engaged in peer review of each other’s work, thus enhancing their scholarly abilities.

**Conclusion**

Through engagement with a constructivist approach when designing opportunities for authentic learning, students were able to develop real-life research proposals. Our experience of developing the course is an example of constructivism being applied as a means for implementing a student-centered approach to learning. In this case, constructivism represents a valuable ontological and pedagogical tool to implement online nursing education that is congruent with the premises and objectives of a student-centered philosophy. Therefore, our experiences of designing and implementing an asynchronous, Web-based course on qualitative research methods for interdisciplinary graduate students using constructivist pedagogy and the 4C/ID model suggest the value of such a format for teaching and learning in nursing education.

**References**


