Building Teaching–Learning Capacities of Online Nurse Educators: Using TPACK to Frame Pedagogical Processes and Identify Required Supports

Renforcer les capacités d'enseignement et d'apprentissage des éducateurs en ligne en soins infirmiers : utiliser le modèle TPACK pour encadrer les processus pédagogiques et repérer les soutiens requis

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Abstract

Quality teaching includes reflective practice, dialogue, and curiosity and depends on personal, institutional, and community assets and constraints, as well as on the individual's definitions of the roles of education in society. Based on an environmental scan and action research with instructors in an online distance Bachelor of Science, Nursing program for registered nurses, participants identified five "big ideas" involving community, instructors, class, interpersonal relationships, and supports to build capacity around the three elements of technological pedagogical content knowledge, or TPACK (Koehler, Mishra, Akcaoglu, & Rosenberg, 2013).

Résumé

Un enseignement de qualité inclut une pratique réflexive, un dialogue et de la curiosité. Il dépend d'atouts et de contraintes personnelles, institutionnelles et communautaires, ainsi que de la façon dont chaque personne définit les rôles de l'éducation dans la société. En s'appuyant sur une analyse environnementale et une recherche-action auprès des instructeurs d'un programme de soins infirmiers pour infirmiers autorisés dans un baccalauréat en sciences en ligne et à distance, les participants ont repéré cinq « grandes idées » relatives à la collectivité, aux instructeurs, aux relations interpersonnelles et aux soutiens pour renforcer les capacités concernant les trois éléments du contenu technologique pédagogique, ou TPACK (Koehler, Mishra, Akcaoglu, et Rosenberg, 2013).

Introduction

Distance education has been witness to a significant evolution over the past 40 years; it is no longer a print-based medium of correspondence course materials distributed from post-

secondary institutions to community members with little to no interaction between instructor and student. Previous models of industrialized, depersonalized connections between the student and course content that emerged in the 1970s (Garrison & Cleveland-Innes, 2010) have been disrupted by technological advances (King & Alperstein, 2015). Emerging technologies rooted in the Internet's vast array of connections enabled a more learner-centred focus on education (Swan, 2010). In current distance education contexts—now more frequently termed as online or e-learning—pedagogical benefits include the ability to cultivate a strong sense of community, effective small group possibilities, responsive partners working on projects together, and collaborative constructivist learning. But "these actions and expectations around new teaching models alienated some staff, particularly those who saw themselves as guardians of the old ways" (Higgins & Northover, 2011, p. 131).

At St. Francis Xavier University (StFX), the post-registered nurse (RN) Bachelor of Science, Nursing (BScN) program is a degree program for nurses who have a nursing diploma and want a baccalaureate degree in nursing. Across Canada, post-RN programs offer a combination of full-time and part-time course delivery modalities including teleconference, correspondence, classes held at off-campus sites, and online (Canadian Nurses Association, 2019). Such flexibility benefits the working RN, who must balance work and academic studies.

One challenge is to design effective and relevant teaching–learning processes for adult learners who are registered nurses, in ways that build on their experience and support the application of new learning to nursing practice. Yet as Johns (2013) argued, "the prescriptive nature of a professional curriculum tends to determine the route and pace of the journey of becoming" (p. 95). Key to effective practice is the ability to develop one's reflective capacity to better understand one's self and place within the profession and build on existing knowledge and skills. Furthermore, "a reflective curriculum offers the opportunity for more flexibility, to wander off the beaten paths and explore the surrounding areas knowing that guides are available to optimize the learning routes (Johns, 2013, p. 95).

The aim of this research was to explore teaching–learning constructs that highlight educators' effective practices in higher education online and to apply these practices to courses in a post-RN Bachelor of Science program delivered virtually via Moodle, a digital learning management system. Informed by an environmental scan of external and internal factors (Graham, Evitts, & Thomas-MacLean, 2008) related to online teaching and learning success, the researchers incorporated participatory action research methods with four nurse educators interested in building their capacity in pedagogy and teaching–learning processes in online courses. Findings are summarized as recommendations to enhance teaching–learning instructional capabilities of not only online nurse educators, but also all educators new to teaching online.

Literature Review

In higher education, there is a wide variance of knowledge about the art and process of teaching. For example, research in adult education informs the teaching–learning process of many nursing education programs in higher education (English, 2012), and recognizes the experiences the learner brings to the dialogue process, setting a safe learning environment (Vella, 2002) and utilizing the experiential learning process (Kolb, 1984). In the nursing literature,

newer approaches such as relational inquiry speak to "inquiry as a form of action" (Hartrick Doane & Varcoe, 2015, p. 6), and these newer approaches include ideas and strategies connecting learning as a "deeply embodied and personal process that requires active and substantial engagement at the experiential level" (Hartrick Doane & Varcoe, 2015, p. 22) and that "produces life-long learners across the continuum of health professions' practice" (Cervero & Daley, 2018, p. 8).

According to Cevero and Daley (2018), health professional educators value learning approaches that include aspects of critical thinking, active and transformative learning, and online learning—areas in which adult educators have expertise. Effective instructional strategies are integral to the successful delivery of distance and online courses (King & Alperstein, 2015); yet, a lack of familiarity with the pedagogical constructs needed to create effective online learning environments, and sometimes uncertainty in how to implement them (Cevero & Daley, 2018; Kraglund-Gauthier, 2012, 2014), impacts instructors' praxis. At StFX—the research site— Moodle and Blackboard Collaborate, a synchronous online classroom with audio and video capabilities, are used for online course delivery.

It is incumbent on the nurse educator to think critically about the process of learning and the quality of assessment when making decisions on what features to use in an online context. Applicable here is Weimer's (2010) caution that mastering the techniques of teaching may not be an intuitive, simple process; furthermore, nurse educators "need to see learning to teach as an ongoing process with more challenging than easy answers" (Weimer, 2010, p. 157). As in any professional industry, the nurse educator's skill in wielding the tools of the trade is one that develops over time with practice, and improves through reflection, research, and theory.

Effective management of online learning environments requires instructors to be able to incorporate key theoretical elements from behavioural, cognitive, and social learning perspectives (Johnson & Aragon, 2003) and is not necessarily a smooth process. Johnson and Aragon's (2003) instructional framework for online learning environments serves as a reminder of the many considerations an online instructor has when designing learning spaces and opportunities, including opportunities for student reflection, connections to life experiences, and interaction with peers. For Dalziel (2008), "The key concept is that an educator is guided to reflect on one or more issues relevant to their teaching" (p. 383). When an instructor prepares a course for online delivery, the task is not to change the on-campus course to suit the online learners; it is to create, from the ground up, a virtual learning environment in which the learner can achieve the same educational goals. It involves creating a community of learners who may never meet face-to-face. It also requires knowing a bit more about the campus infrastructure: how to access library resources at a distance, how assessment for, and of, learning can be done at a distance, how to create and monitor collaborative group work, etc. It entails creating an online community of practice (Wenger, 1998, 2006).

Technological Pedagogical Content Knowledge (TPACK)

Teaching is a complex process; instructors must manage the fluid interplay between content, technology, and pedagogical processes as well as between themselves and their students. Furthermore, functioning effectively in the media-rich online classrooms of the 21st century requires a skilful and appropriate application of technology that is linked strongly to the

curriculum. Moreover, online instructors require even more technological proficiency than their face-to-face counterparts (Bigatel, Ragan, Kennan, May, & Redmond, 2012; The GO Project, 2008). When "problems are often seen as an indicator of incompetence and failure" (Osterman & Kottkamp, 1993, p. 21), specific competencies in pedagogical processes that incorporate technological aspects of teaching and learning are essential. Moreover, Kay's (as cited in Milner-Bolotin, 2014) observation that effective educational design is necessary for educational technology to have sound pedagogical impact is especially relevant here.

Shulman's (1986) treatise that subject matter knowledge and pedagogy should be combined to form pedagogical content knowledge (PCK) is especially relevant to nurse education in that it accounts for not just understanding how to teach, but also an awareness of what topics are difficult to learn. Later, Koehler and Mishra (2009) identified three intersecting elements impacting instructional practice: technological knowledge, pedagogical knowledge, and content knowledge (Figure 1). Taken as a whole, their model of technological, pedagogical, and content knowledge (TPACK) serves to underscore the challenges of teaching with technology and reveals "the types of flexible knowledge needed to successfully integrate technology use into teaching" (Koehler & Mishra, 2009, p. 60).
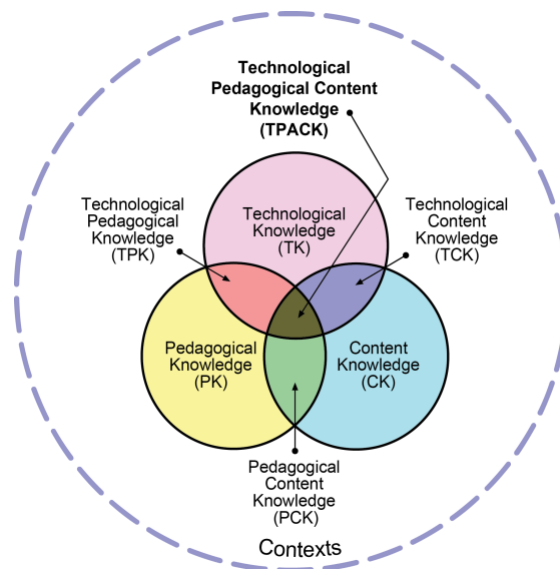

Figure 1. TPACK image (rights free).

Each of the TPACK elements described above can be considered in isolation, yet it is important to remember that quality teaching and effective integration of technology in course design involves the purposeful weaving of all three elements together while being mindful of the needs of the adult learner and the importance of reflection.

Some stakeholders with a vested interest in improving student learning have advised instructors and instructional designers of online courses to remain focused on the quality of academic outcomes that can be derived from technological innovation rather than be swayed by its hype (Laurillard, 2005). Bigatel et al. (2012) echoed this sentiment, noting the criticality of ensuring online teaching is as good as, or better than, traditional face-to-face teaching in light of critiques from sceptics. More recently, Bailey, Vaduganathan, Henry, Laverdiere, and Pugliese's

(2018) research results indicated that, among other outcomes, an investment in the design and development of quality courses can result in equivalent or even improved student learning outcomes. They went on to note the importance of ongoing supports that build expertise in instructional design and teaching practices in online spaces, citing the need to make "significant investment in instructional design, learning science, and digital tools and capabilities" (p. 6).

Quality Teaching

Administrators, instructors, and their students grapple with "how to identify an effective teacher when we see one" (Strong, Gargani, & Hacifazlioğlu, 2011, p. 367) based on pre-defined, value-laden indicators and subjective observations. For the purpose of this research conducted within the context of nursing education, we used Felder and Brent's (1999) definition of quality teaching: "Instruction that leads to effective learning, which in turn means thorough and lasting acquisition of the knowledge, skills, and values the instructor or the institution has set out to impart." Other authors (see Zeidler, 2014) have stressed the importance of providing authentic learning as well as time and space to reflect.

After collaborating with key scholars in the fields of higher education policy, administration, and economics, Chickering and Gamson (1999) contended that the effective teaching of face-to-face post-secondary courses can be linked to the instructor who encourages student–faculty contact; encourages cooperation among students; encourages active learning; gives prompt feedback; emphasizes time on task; communicates high expectations; and respects diverse talents and ways of learning. Missing from this list, however, is the importance of reflection in the learning process, a process that Milner-Bolotin (2014) argued as important for graduate students' ability to connect classroom learning to professional practice. Not surprisingly, in a professional, competency-based program such as a post-RN BScN, where skills and demonstrable knowledge are paramount, "reflective practice tends to be bolted onto the existing curriculum as another teaching technology. …Besides issues of control, teachers are likely to resist a reflective curriculum because they lack knowledge of reflection and are themselves not reflective" (Johns, 2013, p. 94). From a pedagogical standpoint, including these seven points and adding reflective elements into the design, delivery, and assessment of learning outcomes in a face-to-face classroom is a prudent decision—one that has transferability to online learning environments.

Instructional Self-Efficacy and Skills Development

Another important component is instructors' beliefs they can attend to their learners' needs, or feelings of self-efficacy (Bandura, 1993; Power, 2009). Recent research results indicate that the more experience instructors have, the more confidence they have in their own abilities and in the potential of online classrooms to be places of learning that meet students' needs (Kraglund-Gauthier, 2014). This finding reflected those of Allen and Seaman (2012), who concluded, "faculty members with a greater exposure to online education have a less-pessimistic view than their peers" (p. 2). Instructors with experience could envision the benefits, yet those with little to no experience could only comment on their lack of decision-making power.

Skill and comfort in the platform are also important. When instructors are not comfortable with the online tools, their confidence in their own teaching abilities will falter

somewhat (Kraglund-Gauthier, 2014). They become reluctant to use the tools and worry that if the lesson plan does not unfold as intended, the teaching moment will be lost and their professionalism and academic knowledge could be questioned (Kraglund-Gauthier, Chareka, Murray Orr, & Foran, 2010). These highly venerated subject matter experts may have been hesitant to admit to their skill deficits. However, "even champions have coaches" (Hunter, 2004, p. 3), and from the literature, it is apparent that coaching ought to be in place in order to help nurse educators address teaching and learning needs which lead to success.

Online Communities of Practice

One of the dangers inherent in online teaching is the sense of isolation an instructor can feel. The physical disconnect from colleagues can impact an instructor's sense of confidence and self-efficacy in navigating the virtual space. Recommendations to create or join an existing online community of practice appear throughout the literature reviewed for this research.

Wenger (1998, 2006) presented the concept of a community of practice, defining it as "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (Wenger, 2006, para. 3). For Wenger, shared concern brings practitioners together as they learn to improve what they do while interacting with other community members. Likewise, Danielson (2007) posited that, "when such conversations are organized around a common framework, teachers are able to learn from one another and to thereby enrich their own teaching" (p. 6). This parallels with some of Loughran's (2005) assertions of teaching about teaching. For Loughran, "articulating personal principles of practice helps in better aligning practice and beliefs [; furthermore,] a shared experience with a valued other provides greater opportunity to reframe situations and confront one's assumptions about practice" (pp. 35–36).

There are other avenues through which to ask questions and invite feedback. For example, a number of social media venues—either free or for a membership fee—operate for this very reason. One recent project, the Australia-based *Learning to Teach Online* project (McIntyre, 2011) was conceptualized and delivered following a philosophical alignment within a community of practice of online instructors, designers, and administrators. Core components of this resource are rooted in the three dimensions of a community of practice: "a community of mutual engagement, a negotiated enterprise, and a repertoire of negotiable resources accumulated over time" (Wenger, 1998, p. 126). Instructor, student, content, and setting each play a key role in the development of learning environments in which the skill of nurse educators is measured in terms of their abilities to create activities that attend to the specific learning needs of their students.

Method

This study used participatory action research methods to engage educators in StFX's Distance post-RN BScN program as participants to build capacity in pedagogy and teaching-learning processes in their online courses. Action research is a critical research approach, described by Kuhn and Quigley (1997) as research focusing on "gaining a better understanding of a practice problem or achieving a real change or improvement in practice context ... [that]

allows practitioners to both improve their practice and better understand the nature of that practice" (pp. 23–24).

From the population of 15 educators teaching courses in the Distance post-RN BScN program at the time of the study, four volunteered who were able to meet as a group and work alongside Kraglund-Gauthier, the university's instructional designer and co-researcher, throughout the research project timeline. Of this group, three participants were physically located on campus and one was located at a distance. Provisions were made to connect this participant digitally into the group sessions. As participatory action researchers, Moseley (co-researcher and online instructor within the Distance post-RN BScN program) and Kraglund-Gauthier (also a sessional online instructor within StFX's Faculty of Education) were involved in each of the phases.

The action research method used three phases and included participants in all phases. Following the researchers' beliefs that educators, as practitioners, are key stakeholders and therefore must be included and represented in all phases of the action research, "dialogue" was implemented as part of the action research, adhering to "the values of teamwork, sound relationships, assessment, respect, safety, immediacy, engagement and accountability" (Moseley, 2004, p. 112). Through the action research phases (Figure 2), participants were asked to make suggestions on effective pedagogy and processes to be included in a planned handbook resource for educators.

Planning
- 1/2 day session to review literature
- Selection of strategies to incorporate and methods of evaluation

Action
- Design and delivery of strategies
- Individual sessions with ID

Reflection
- 1/2 day session to review outcomes of strategies implemented and make recommendations

Figure 2. Phases of participatory action research methods.

The first was the planning phase, a half-day session that included reviewing findings from a literature review of pedagogy and teaching-learning processes in online education and a review of Moodle capabilities. Dialogue with participants was focused on encouraging participants to share their expertise and experiences in teaching online. In this phase, participants were asked to identify one or two teaching-learning strategies to include in their next distance online course. Participants then developed criteria by which the strategies could be evaluated by themselves and by Kraglund-Gauthier in her role as instructional designer. The second action phase involved the design and delivery of strategies in participants' courses and at least three individual sessions with Kraglund-Gauthier, conducted either in person or online. The content of

these sessions reflected each participant's selected focus on a teaching–learning strategy and its related theoretical and practical considerations for an online course delivered via Moodle and that involved discussion forum, resources, and quizzes. Kraglund-Gauthier logged field notes of these sessions as part of her regular workflow as instructional designer. The third reflection phase was a half-day meeting in which participants reflected and shared their evaluation of the teaching-learning strategies they chose to use.

Findings

The following findings were drawn from three phases of participatory action research—planning, action, and reflection—conducted with faculty members teaching within a distance Post-RN BScN program. They taught a range of courses, including Cell Biology, Comprehensive Health Assessment, Community Health Nursing, Health Teaching and Learning, etc. Their students were mostly Post-RN practicing nurses living and working across Canada and studying part-time. Some students, however, were undergraduate BScN students enrolled in full-time studies on the university campus and who needed the flexibility of scheduling afforded by the asynchronous nature of the course. Research participants volunteered their time towards achieving the research goal of building teaching–learning instructional capacities of colleagues and themselves by identifying and sharing effective practices in a "blueprint" for online courses.

Five "big ideas" emerged in the planning phase as participants shared their expertise, experiences, and questions about teaching online and with technology: (a) community; (b) instructors; (c) classroom; (d) interpersonal relationships; and (e) supports (Figure 3).
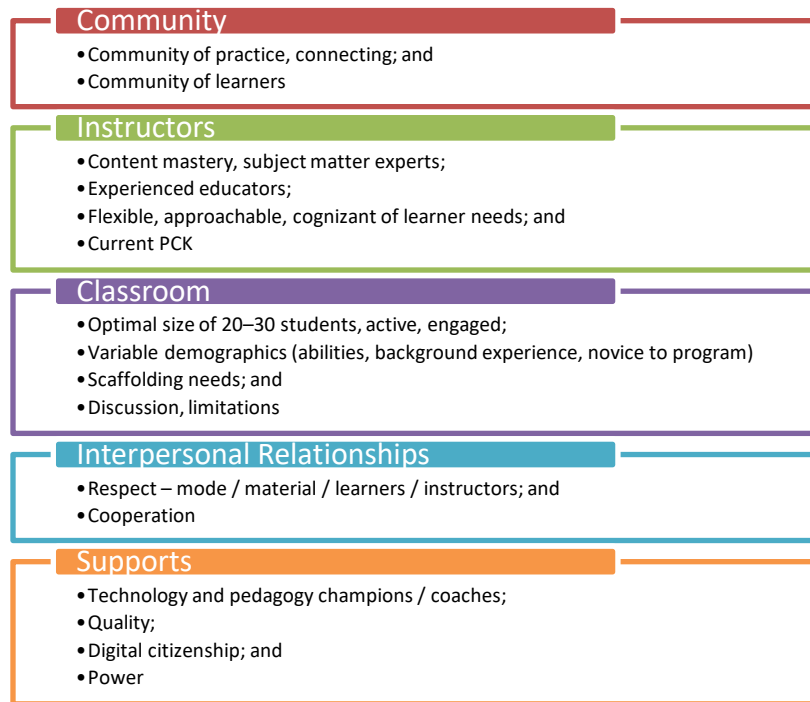
Community
- Community of practice, connecting; and
- Community of learners

Instructors
- Content mastery, subject matter experts;
- Experienced educators;
- Flexible, approachable, cognizant of learner needs; and
- Current PCK

Classroom
- Optimal size of 20–30 students, active, engaged;
- Variable demographics (abilities, background experience, novice to program)
- Scaffolding needs; and
- Discussion, limitations

Interpersonal Relationships
- Respect – mode / material / learners / instructors; and
- Cooperation

Supports
- Technology and pedagogy champions / coaches;
- Quality;
- Digital citizenship; and
- Power

Figure 3. Areas of thinking that emerged during the planning phase.

These areas of thinking framed the future conversations and actions taken up in the subsequent phases of the action research process, including ongoing sharing of resources to address concerns and the implementation of teaching tools and strategies to effectively meet participants' pedagogical needs.

Comments and ideas from participants in the evaluation phase of the action research were aligned with the three elements of Koehler and Mishra's (2009) TPACK framework: technological knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK). The following sections reveal their thinking about how these elements impact, and are impacted, in a post-RN Distance Nursing program that is delivered asynchronously at a distance using technology and taught by both full-time and sessional instructors. Subsequent sections address other findings related to the impacts of student knowledge of practice and in practice and their technological skills based on their demographics of being either part- or full-time students who were working as an RN in Canada and studying at a distance.

Technological Knowledge (TK)

From a pragmatic perspective, technological knowledge is a part of successful online teaching. Aligning with other research results (Kraglund-Gauthier et al., 2010), instructors needed to feel a level of comfort and competence with the tools involved in facilitating engaging learner-centred content knowledge acquisition. This required an understanding of the limits and possibilities of the technological tools and a realistic sense of the limits posed by time. Writing within the context of teacher educator, Milner-Bolotin (2016) also noted that an educator's technological, pedagogical content knowledge "does not necessarily translated into improved student outcomes unless teachers incorporate these novel pedagogies into their practice" (p. 85). In this research, participants' technological knowledge influenced pedagogical design and also stimulated their search for meaningful pedagogical knowledge.

In this research, participants were asked to choose one new technological tool that they would explore throughout the term. Just one was requested in order to respect the time constraints in learning a new tool and to focus participants' reflection on the learning process. Throughout the term, participants met individually with Kraglund-Gauthier to learn how their chosen tools functioned and to explore the pedagogical underpinnings of incorporating that tool. These participants were Ivy, Neil, Alice, Nadine, and Tom. Participant names and/or gender have been changed to respect confidentiality in the research process. As well, Moseley's identity as an instructor in this participatory action research process is masked as one of the pseudonyms.

Ivy decided to incorporate video into her course, feeling it was a way to connect with her students and to explain course content verbally in addition to what she provided on the syllabus. With Kraglund-Gauthier's assistance, Ivy recorded two videos: "one introducing the course and another giving a brief explanation of how to complete their lab assignments." Neil also added a video introduction to the course and also added several videos to introduce the content of each module. He commented that his "grandchildren had used the video software on the laptop, but [he] had never." He needed assistance from Kraglund-Gauthier in how to use the recording feature and how to transfer the files from his laptop to his Moodle site. Neil also sought advice

from Kraglund-Gauthier on terms of how long the videos should be because he was worried about the file sizes.

Alice "decided to introduce a compulsory discussion board ... a start-off discussion (medically orientated)." Likewise, Nadine, Tom, and Neil used the discussion forum to create opportunities for interactions between students. They needed help understanding how to make both randomly- and manually-populated groups based on topic or date and had to revisit the descriptors for visible and hidden groups and subgroups frequently in order to understand its functionality. They also asked for recommendations of ways to track and collect the discussion forum content for instructor-level responses and grading purposes.

Staff with StFX's Continuing & Distance Education department uploaded most of the established course content, along with resource documentation and links, but participants needed to learn how to add and modify time-sensitive content including current information from the field and new discussion forums to discuss emerging issues. Particularly challenging for two participants was the way quizzes were built and administered via Moodle. They mentioned how time-consuming it was to add questions to the question bank as non-typists who were not familiar with the process in Moodle but preferred this to using mainly or solely the publisher-supplied questions that could be quickly uploaded as a batch file.

All participants noted the usefulness of Moodle in terms of content organization and felt the similar format and layout across courses helped the students get comfortable with the materials and content format easily. One consideration, however, was the technology itself. "You need to take into account what the learners have access to" (Ivy). Participants talked about the evolution of the distance program and the shift from paper, to CD-ROM, to Internet-based materials. Each change in technology has required both instructors and students to learn new delivery formats and different ways for instructors to design learning activities and assessment tools. These comments and others mentioned above are evidence of participants' awareness of how technological knowledge intertwines with pedagogical knowledge.

Pedagogical Knowledge (PK)

Throughout the course of this research, participants expressed their understandings of pedagogical knowledge in both specific and subtle ways that reflect principles of learner-centred education. They did this while reflecting on their face-to-face classroom practice, comparing it to how they designed and delivered learning activities for their online courses. Revealing their focus on their students' learning processes, the comments below weave their rationale for pedagogical design with examples of their students' learning processes and outcomes.

In the post-RN distance nursing program, students are all at a distance from campus, many are working full-time while taking courses, and have specific knowledge and skills learned from years of nursing practice. Their outlook on learning and on nursing practice is different than those of students in the undergraduate nursing program and was an aspect of not only pedagogical knowledge, but also content knowledge for participants to consider. As Tom observed:

For any of the courses, you cannot take a campus course and just plunk it into an online course … It is different in that the methods of teaching, the community of practice … with the online courses, you aren't doing a lot of teaching. You are delivering a course that allows the student to learn the information however they want to learn the information … they all have different expertise, different tools.

This comment speaks to the need for online course instructors to have pedagogical knowledge of the teaching–learning process for adults and an understanding of how the presentation of course materials impacts how the student engages with the content.

I am looking more at transferable skills—scientific process, critical thinking, research—about infection processes, about antibiotic resistance, and the action of drugs and so on. If I filtered out just half a dozen things to focus on, and forget about every microbe that causes this disease and that sort of thing, something they can pick up. So, that's where my experience comes in. I feel comfortable to put that together and still get across enough … [that] they can then, use the process, use the transfer, use their skills to try and understand the situation. (Alice)

Recognizing that students came into her course with varying familiarity with Moodle's interactive discussion forum, Alice "built 4–5 questions and then posted the first one to get the students going. Once they got going [I] would post in the next question and posted the others at appropriate intervals, progressively leading them." Likewise, Tom noted the importance of ensuring that the "framework of the course was student centred" noting that, "You absolutely need the right people to develop courses. Like for instance, Wendy helped with course design and development." Participants went on to discuss how important it was for the instructional designer to not only possess technical knowledge, but also pedagogical knowledge.

When using Moodle as the delivery medium, the discussion forum played an essential role in engaging learners with the content and with each other. The following comments demonstrate how the design of the discussions themselves leads to increased learning and learner motivation:

- [Students] got very engaged … they seemed surprised at the 'sameness' … having the same issues happening at the hospitals, you know, politics. It was very interesting … and because we have the international students coming in from Africa, India, and China, and they are doing just one course—the DNUR 135 [Contemporary Issues in Nursing]— bringing their experiences from these countries and talking to each other. To me it was phenomenal. It was wonderful." (Tom)
- Students [were] coming up with some good stuff and getting in depth. … I have an essay question on the final exam, and I decided to post this question as the third part of the discussion forum. So, I haven't increased content, but I have increased their learning interaction and preparation for their assignment and exam. (Alice)
- [The discussion forum] was a great learning tool, better than lecturing in a sense, where it is a one-way thing. Interacting [students] are coming up with very good websites. …It is a really good sign that they are digging out the points. (Alice)
- Critical thinking and analysis are better because they have an opportunity to think about what they are learning and explore ideas with peers. (Nadine)

- Some courses have both undergrad and RNs … wonderful mix in discussion board. In courses like Palliative Care, Forensic Nursing, we have a large group of 19-year-olds, on campus nursing students who are taking this course with seasoned RNs. And they are mixed within each group—an excellent resource for learning because the on-campus students don't have the experience, and yet they are pretty savvy with technology and research and doing things, and you will see them help each other on the discussion board. One is saying, "Well, I found this…" and other is saying "This is my experience" and they go "Wow, you really did see that in the clinical area…" So, it is a great learning opportunity. (Tom)

Content Knowledge (CK)

In the post-RN program, students have content knowledge built from years of experience in the field. Yet in some of these courses, students with less field experience have been added because of scheduling conflicts, enrollment start dates, personal time constraints, and other issues that typically impact adult learners. From a teaching perspective rooted in constructivist principles of beginning where the students are at, and honouring and incorporating their knowledge and experience, this fluidity of experience can present a challenge when preparing courses with course content that is often finalized before the instructor knows "who is in the room" (Tom).

How to Support Instructors to Develop TPACK

Participants were clear in their understanding of what they needed in order to develop their own TPACK as well as the TPACK within a community of instructors in the post-RN BScN program delivered at a distance. Their responses are categorized below in terms of the individual elements of TK, PK, and CK; however, they recognized that these elements were not distinct. Rather, each blended together to form TPACK.

Technological knowledge support. During the focus group session, respondents were able to make recommendations on the types of technological supports they and their students needed in order to be successful. They wanted access to "Somebody there to help solve technological problems or to answer questions on Moodle quickly (Alice); "Someone to discuss technology and pedagogy with, because there might be other existing or emerging options that can be implemented" (Tom); and "Dedicated technical support...Until I explored the introductory video clips with Z and how they could be uploaded onto Moodle, I never even considered it as an option" (Ivy).

Pedagogical knowledge support. Participants were aware they needed ongoing support to develop their pedagogical knowledge during their own transition to online teaching and learning. They recognized that instructors were often practitioners or researchers first and may not have had training or professional development in educative processes. The following are comments related to pedagogical knowledge supports:

- We need someone who can show what are the potentials that are possible with the evolving technological resources that we have. …it would be one up for us to have someone who is an educator. ... The other is the course design, working out the features.

So that we are one up, so that we know what is happening in the future, therefore we can think of it, and when the time comes and it is right from the students' point of view, we can implement it. (Alice)

- As adult learners, these students need to have a variety of methods of assessment, of evaluation of [their learning] … Now they have choices, their exams may be multiple choice, they might be short answer, they might be entirely essay, they might be a presentation, they might be a group project, and I feel that is really important as an adult learner. (Tom)

- If you look now at course evaluation, I am seeing discussion is being graded, being assessed. How are they communicating with each other? What is their contribution like? Then they do a global response, so how good are they to write? Do they need help with the tools of APA? And you see them having choice. Choices like you do, Alice. You say, "Of these 5 questions, answer 1." So, they are answering maybe something that they are passionate about and it comes through loud and clear. We are not trying to fit them into the same key hole. We are trying to get them to be able to express themselves and to learn to be independent. (Tom)

Content knowledge support. Participants were experts in their respective teaching fields; they felt comfortable with the content. They did, however, express concern with having less-skilled instructors teaching the course because of contractual employment agreements or last-minute changes to staffing complements. They each recognized the need to be able to implement changes to the curriculum, explaining that the content needed to be organic and address the changing nature of nursing and related elements of health sciences. Participants expressed concern with a "canned course" and not having the authority to change content because they were not the course content authors.

Discussion

This research has revealed a number of considerations for not only the emerging online nurse educator, but also for others new to teaching online in higher education. "For the teacher engaged with TPACK, knowledge of technology, pedagogy, and content is synthesized and put to use for the design of learning experiences for students" (Koehler et al., 2013, p. 4). Furthermore, successful online instruction involves creating a community of learners who may never meet face-to-face and reveals the criticality of engaging students, and of providing authentic opportunities for them to express themselves through their assignments and activities. "Good teaching with technology, therefore, cannot be achieved by simply adding a new piece of technology upon existing structures. Good teaching, with technology, requires a shift in existing pedagogical and content domains" (Koehler et al., 2013, p. 3). These activities and assignments need clear instructions and clear and measurable learning outcomes and results.

The online nurse educators in this research needed to be flexible and to vary approaches to address the learning needs and abilities of their students. They agreed that activities needed to be designed in such a way that the learner's interests are stimulated and abilities are stretched. This includes the creation of cooperative learning environments, respectful spaces and conversations, and authentic ways to apply new understandings, such as through a case study. Recognizing and tapping into students' prior learning and experiences were powerful motivational tools, as were collaborative small group assignments, responsive partners working

on projects together, and engaging dialogue through discussion forums. This finding aligns with that of Milner-Bolotin (2014), who found the online community within the course to be engaging and intellectually stimulating.

From participants' feedback, it was evident that degrees of authenticity in teaching and learning depended on personal, institutional, and community constraints and on the individual's definitions of the roles of education in society (Cranton, 2001); moreover, "The key concept is that an educator is guided to reflect on one or more issues relevant to their teaching" (Dalziel, 2008, p. 383). Reflecting on process and practice was a dominant theme in much of the literature reviewed during this research project, as was a stress on the importance of making connections—with and between students, but also with and between colleagues. One way to do so is through a reflective community of practice, while acknowledging that "Teachers resist reflection because they are not reflective. They see it as a threat to their own competence as a teacher. ... They are wrapped up in conventional theory-driven curriculum grounded in the delivery of extensive ideas, caught up in practice of aims of objectives and so on" (Johns, 2013, p. 113).

The themes of community of practice and program supports emerged from the synthesis of the project, which included an environmental scan and action research. These themes led us to explore together the supports necessary to develop capacity in the post-RN distance BScN program. To embed TPACK in the post-RN distance BScN program, it is essential that supports are developed for both instructors and for learners. Appendix A contains a list of what participants identified as necessary supports, tools, and processes and also what emerged from the environmental scan that supports authentic teaching practice.

In traditional bricks-and-mortar post-secondary institutions, "the receptivity and perceived legitimacy of new educational delivery modes is strongly related to the extent to which these instructional technologies reinforce or retain the central elements of the institutionalized and identity-enhancing classroom setting" (Jaffee, 1998, p. 28). As support for online learning spreads throughout the academy, it is important to remain critically reflective on how "learning formats, pedagogical approaches and student achievement interact" (Lalonde, 2011, p. 408). Furthermore, although an instinct may be to standardize practice in an attempt to reach a consistent quality, "shared practice does not entail uniformity, conformity, cooperation, or agreement, but it does entail a kind of diversity in which perspectives and identities are engaged with one another" (Wenger, 1998, pp. 128–129).

Effective instructional strategies are integral to the successful delivery of distance and online courses (King & Alperstein, 2015), yet, a lack of familiarity with the pedagogical constructs needed to create effective learning environments, and sometimes uncertainty in how to implement them (Kraglund-Gauthier, 2014), impacts instructors' praxis. For example, in a case study of six institutions, Bailey et al. (2018) argued for the necessity of providing "expert digital design principles…to help faculty develop courses that take maximum advantage of the benefits of digital delivery" (p. 31). They also noted that instructors who taught online believed their courses were just as, if not more, rigorous than some face-to-face classes.

If the nature of teaching and learning in the 21st century has shifted to be more a dynamic and engaging process as some authors have argued (Contact North, 2013; Dalziel, 2008; King & Alperstein, 2015), then educators at the post-secondary level may need to shift their own

thinking about pedagogical processes and focus on the lessons learned from applications of adult education theory in terms of "an understanding of and strategies in how to humanize online learning and create an instructor presence online" (Cervero & Daley, 2018, p. 13). Critical reflection in the online course design process is important; so too is the learning process of its educators as they navigate the online environment. Moreover, "given the social and relational character of pedagogical contexts, the way in which we engage with others online and offline is of paramount importance. …The different experiential qualities of these encounters have far-reaching pedagogical implications" (Friesen, 2010, p. 16).

Before deciding to teach online, educators should be aware of both the differences and similarities along with the challenges and successes inherent in virtual classroom spaces as compared to the physical classroom (Bigatel et al., 2012). When instructors prepare a course for online delivery, the task is not always to change the on-campus course to suit the online medium; it may require the creation of new material to achieve learning objectives. As well, the effective management of online learning environments requires instructors to be able to incorporate key theoretical elements such as behavioural, cognitive, and social learning perspectives (Dalziel, 2008) and is not necessarily a smooth process for all professors.

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Appendix A: Identified Necessary Supports, Tools, and Processes

Community of Practice (*Instructors*)

1. Orientation of instructors that includes modules to introduce and process technological knowledge, pedagogical knowledge, and content knowledge (See TPACK).

2. Orientation to philosophy of the program (learner-centred, reflective practice, active learning, experiential learning, dialogue and application of theory to practice, transformative learning, facilitating curiosity, the pedagogical methods/strategies which may be used to process course content into transferable skills in nursing practice.

3. Regular webinars for reflective practice dialogue, sharing of successes and challenges, feedback and evaluations, and professional development (See "Capabilities of Online Facilitators") to continuously improve the program.

4. Dedicated support persons and mentors: Technological and pedagogical knowledge for course design and development.

Community of Practice (*Learners*)

1. Orientation of learners with first course: Develop modules for APA, Moodle (technological knowledge).
2. Orientation of learners to philosophy of program (learner-centred, reflective practice, active learning, experiential learning, dialogue and application of theory to practice, the pedagogical methods/strategies which may be used to process course content: Develop modules.
3. Dedicated support person for technology who is available 24/7 during regular hours.
4. Develop community of practice within the course.

Program

1. Limit number of students per course to 20–30 maximum.
2. Standard formats (i.e., APA, discussion forums, assignments, evaluations)
3. Provide student profiles for each course: How many are Post RN, international students not registered in Canada, and undergraduate; what course previously completed; English as a second language; access and experience with technology.
4. Accessible resources for writing, research, references, etc.
5. Course feedback and debriefing.
6. Accountability of instructors to learners and to the program's philosophy and goals.

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