Embedded Experts in Online Collaborative Learning: A Case Study

Abstract: The affordance of online communication and collaboration technology provides a forum for preservice teachers, practicing teachers, and teacher educators to engage in authentic discourse where multiple perspectives can be shared. This qualitative case study explores the perceptions and experiences of embedded experts in a global learning community that occurred over a 12 year period. The study was designed using the Online Collaborative Learning Framework developed by the authors in 2006. The goal of the study was to provide a nuanced understanding of embedded experts in online discussion that engage in real world issues related to today's diverse and digital classrooms. From the thematic analysis of the data, the following three implications emerged: Purposeful selection of technology; orientation and supports for the experts; and design of an organic environment that fosters the development of community including embedded experts.

Key Words: critical discourse; embedded expert; global classroom; online collaboration; online learning

1 Introduction

In preparing tomorrow's educators, teacher education programs need to provide an array of authentic learning experiences, including learning online, where learning occurs through critical discourse. The Internet "connectivity afforded by online learning environments becomes increasingly important as it enables us to situate learning and connect learners in a manner that is not possible in other modes" (Kehrwald, Reushle, Redmond, Cleary, Albion, & Maroulis, 2005, p. 23). Teacher educators, have the challenge of enacting the curriculum by designing authentic online learning experiences that engages critical discourse. That is, within an online collaborative learning context, preservice teachers integrate prior knowledge and experiences, new knowledge and experiences, multiple perspectives and higher order thinking.

Given the affordances of digital technologies, both synchronous and asynchronous communication, there is a wealth of opportunities for preservice teachers to investigate topics and issues within the global classroom, with peers and experts. Both novice and experienced teachers are coping with an increased number of complex problems. The online environment

provides a rich learning space where they can learn with and from each other. As far back as 1999, Fowler and Mayes identified that it was important to shift "the emphasis of learning away from the 'what' we learn to the 'who' we learn from" (p. 14). By participating in global classroom experiences, preservice teachers will develop a deeper understanding of themselves as global citizens, as well as be better positioned to create and facilitate such learning for their future students.

For 12 years, the authors facilitated the International Collaborative Inquiry learning experience where preservice teachers had the opportunity to engage in critical discourse with practicing teachers, and teacher educators from around the globe. This experience was designed using the online collaborative learning framework developed by the authors and published in the *Internet and Higher Education* journal in 2006. The purpose of this article is threefold. First, an overview of the Online Collaborative Learning Framework is shared which provided the underpinnings of the design and facilitation of the experience. Second, interview data from the embedded experts is shared with regard to their experiences and perceptions of using such an experience to foster preservice teachers understanding of complex educational topics, as well as modelling effective use of technology in teacher education. Third, the article concludes with implications for practice for the role of embedded experts in the design of online learning for preservice teachers.

2 Conceptual Framework

In 2006, Redmond and Lock first published their flexible framework for online collaborative learning entitled the Online Collaborative Learning Framework. The framework is grounded in a social constructivist approach to learning in technology-enabled learning environments. With a constructivist approach, the student is "active rather than passive … it is the individual learner's interpretation and processing of what is received through the senses that creates knowledge" (Ally, 2008, p. 18). In fostering this approach to learning requires, "creating learning conditions that engages students in active learning and in using higher order thinking to foster personal meaning making (Lock & Johnson 2018, p. 186).

Redmond and Lock (2006), drew on the research of Garrison, Anderson and Archer's (1999) *Community of Inquiry* (CoI) model to inform the flexible framework. A critical component is that students are engaged in robust authentic learning where they are learning with and from the others in an online collaborative environment. The framework is focused on fostering collaborative and interactive environments "where learners and educators are co-creators of knowledge. Through interaction, the collective intelligence encompasses learning from each other so that the overall learning gained is greater than the sum of the independent work of each learner" (Redmond & Lock, 2006, p. 270).

Figure 1 shows how the intersection of the six key actions results in the nexus for knowledge in action. Each component of the framework involves an action.

- Fostering social presence: Feeling connected or real during online discussions.
- Developing and maintaining teaching presence: Designing and using instructional strategies to create the educational experience.
- Creating and sustaining a learning community: People are learning to effectively communicate and collaborate with each other in support of their own learning.
- Exploring cognitive presence: Activities and strategies for critical thinking building of knowledge and application.
- Scaffolding learning: Supporting or structuring activities to fostering deep learning.
- Participating in critical discourse: Integration of prior knowledge and other perspectives to create new knowledge.
- Knowledge in action: Activities such as creating, problem solving, development of artifacts (Redmond & Lock, 2006).

Figure 1. Online collaborative learning framework (Redmond and Lock, 2006)

This article focuses on the critical discourse section of the framework. It has been 12 years since the Online Collaborative Learning Framework was published. This framework provides a guide for both designing online collaborative learning, as well as facilitating and scaffolding deep learning. The framework underpins a learning experience, which has been replicated with refinement for improvement for 12 years, and has been reported through a number of research studies (see for example Redmond & Lock, 2019; Redmond, Lock & Smart, 2017; Redmond & Lock, 2015; Lock & Redmond, 2015; Redmond & Lock, 2013; Lock & Redmond, 2011; Redmond & Lock, 2009; Lock & Redmond, 2009; Lock & Redmond, 2006). The series of conference papers, journal articles, and book chapters relate to topics such as technology integration in teaching and learning, cyberbullying, Indigenous perspectives, special needs, teacher presence, TPACK, online assessment, and online collaboration. Their research to date has focused on the student experience. The purpose of this article is to share the experiences and perceptions of the embedded experts (practicing teachers and teacher educators) who engaged over time with the online international collaborative experience.

3.0 Embedded expert

The traditional model of teacher education involves two key roles: 1) the teacher educator designing and leading the learning in courses at university, and 2) the practicum teacher who provides a mentoring experience. In both situations, the teacher educators and mentor teachers are in the role of assessor of the preservice teachers' learning and performance. An addition role, is when practicing teachers or other teacher educators are invited into a class as a guest speaker.

Often this one-time, short-term guest speaker role is focused on sharing information. This form of learning is one directional and does not accommodate for sustained conversation over time.

Often constructivist theory used to guide the design of online learning environments (Palloff & Pratt, 1999). Drawing on a social constructivist approach, we see the role of the practicing teachers or teacher educators can be that of an embedded expert. An expert who joins the preservice teachers learning environment and can be there for an extended period of time. These experts are embedded in the online environment where the learning is being driven by preservice teachers' questions, inquiry, and sharing of information.

The embedded experts bring their unique knowledge, skills, experiences, values, beliefs, and attitudes to the conversation initiated by the preservice teachers. As argued by Winch (2017), experts draw on their high levels of professional knowledge to understand the complex nature of situations, to make judgements, and to act. A role of the expert is to assist novices, preservice teachers, in chunking knowledge and skills from experiences they already encountered or studied in theory (Winch, 2017). Within the online learning environment, these embedded experts are able to respond to comments, share stories, and experience, as well as address misconceptions. In this type online learning environment, all (preservice teachers, teachers, and teacher educators) are members of the global "community" and they bring different perspectives. As they engage in discussion, share experiences, and insights, it helps to deepen all of their understandings.

The nature of the learning experience with the embedded expert is different from mentoring but similar to coaching. Mentoring as defined by Smith (2007) is "a particular mode of learning wherein the mentor not only supports the mentee, but also challenges them productively so that progress is made" (p. 277). Whereas with the embedded coach, there is more of an openness to learning with and from each other through critical discourse. Coaching according to Oliver (2007) "improves instructional practices of teachers in order to increase student learning" (p. 1). The coaching needs to be responsive to the individual so to accommodate where they are currently at in terms of the learning and practice. This aligns with the work of the embedded expert given they need to be able to interpret from the online discussion where the preservice teachers are in their learning and then to respond in ways to informs, extends and enhance their learning. It is dynamic relationship, just as in coaching, the embedded expert "needs to maintain open communication and foster collaboration within a trusting climate" (Lock, 2018, p. 311).

We, the authors, define an embedded expert in an online environment as an individual sharing theory and practice expertise, while learning with and from others as part of the learning continuum toward knowledge in action. Unlike coaching, the embedded expert is not working one-to-one. Rather, they are working in a one-to-many relationship. The embedded expert engages in discussion, shares experiences, multiple perspectives, observations, resources, as well as challenges notions of teaching practice.

4. Context

In 2005, the authors designed and facilitated an international online collaborative learning experience entitled International Collaborative Inquiry into Diversity and Inclusivity. This cross-institutional inquiry-based experience was offered initially once a year and then twice a year to preservice teachers. Preservice teachers were in an undergraduate or postgraduate teacher education program. During the 12 years, there were 20 cohorts of students. This learning experience has reached about 5,000 preservice teachers during that time. Over a six-week academic period, preservice teachers engaged in online discussions with peers, practicing teachers, and teacher educators from Canada, USA, Russia, and Australia in a virtual classroom. Practicing teachers and teacher educators volunteered as subject matter experts in the online environment working with the preservice teachers (also known as students). The students, practice teachers, and teacher educators engaged in discussions, shared experiences and multiple perspectives, observations, and resources as they investigated topics of inclusion, diversity, and technology integration in contemporary classrooms.

During the 12 years of the project a number of different online spaces were used for the project, including Blackboard, Wikispaces and Moodle. A cheat sheet for how to use the online space was provided for both the pre-service teachers and the experts. The pre-service teachers were in the online spaces for several weeks before the experts joined so they had developed familiarity for using the online space. The experts were able to call on the facilitators if they required additional assistance. Most of the experts had experience teaching online and were familiar with the technologies being used and with engaged in online discourse. The pre-service teachers were either in their second year of a four year Bachelor of Education or in their first semester of a one year Graduate Diploma of Teaching. The courses involved were curriculum and pedagogy courses. These courses were run with online courses and face to face cohorts, with 70% of the students having studied online.

This inquiry-based experience was guided by the following four goals:

- “to provide an open and flexible environment for authentic discussion between preservice teachers, inservice teachers and teacher educators”;
- “to create opportunities for the development of deep understanding of diverse classrooms through discourse and the sharing of experiences and resources”;
- “to develop global relationships through giving participants the experience of working in a global classroom and to help them gain a global perspective and understanding of issues and topics”;
- “to develop an increased understanding of diversity and inclusivity in today’s classrooms” (Lock & Redmond, 2011, p. 21) .

The design underpinning this interdisciplinary experience was the Online Collaborative Learning Framework. Each of the five components were integrated into the experience using the following four-stage approach (Lock & Redmond, 2011):

- Community Building: Creation of a learning community where preservice teachers were posting their introductions online and interacting with peers. Orientation provided using a rubric to help preservice teachers develop an understanding of what makes a robust online discussion post.
- Learning from a Shared Experience: Each preservice teacher read one of four selected stimulus novels books that aligned with the themes of diversity and inclusion. In teams, the preservice teachers wrote a review, identified curriculum links and pedagogical implications, and inquiry questions. This review was posted in the virtual classroom. Preservice teachers' inquiry questions were selected and posted in separate discussion forums. The two teacher educators, facilitators, facilitated this discussion and modeled effective online discussion practice.
- Learning from Teachers as Experts: During the fourth and fifth week, practicing teachers, embedded experts, were invited to participate in the online discussion. The experts picture and biography was posted so that everyone could learn of who they were before engaging in the online discussion. These embedded experts had an opportunity to participate both asynchronously and synchronously. First, an asynchronous discussion forums were created for each topic (e.g., cyberbullying, Indigenous perspectives, special education, EALD, and technology integration). Second, a one-hour synchronous video conference session entitled Café Conversations occurred during the two weeks. One expert per topic was featured in a café conversation, with one of the facilitators moderating the synchronous session.
- Critical Reflection: Preservice teachers during the final week wrote a reflection on their online collaborative learning experience from this experience. They were asked to reflect on the content and the process of being involved in an online community.

The experience was designed for preservice teachers to engage in discussion about real world contemporary education topics. Meaning making using a social constructivist approach is "a process of negotiation among the participants through dialogues or conversations" (Jonassen, Peck, & Wilson, 1999, p. 5). A deep constructivist approach involves "…practices such as identifying problems of understanding, establishing and refining goals based on progress, gathering information, theorizing, designing experiments, answering questions and improving theories, building models, monitoring and evaluating progress, and reporting are all directed by the participants themselves" (Scardamalia & Bereiter, 2003, p.1371).

The experience provided a risk free environment for preservice teachers to engage with practicing teachers. Most interaction that preservice teachers have with practicing teachers (experts) is through mentoring while on their professional experience placements in school. In this mentoring role, the teacher writes an assessment report at the completion of the experience. In such a situation, the preservice teachers do not like asking questions that give the appearance that they do not know what they are doing. Within the collaborative framework of the experience, the experts were not in a role for making judgements on the preservice teachers' thinking or performance. Rather, it was a safe space to ask questions without judgement. The role of the embedded expert was to be an authentic audience for the preservice teacher discussion. Preservice teachers were able to interrogate ideas and questions, link theory to practice, and identify areas for further research. Through their participation, preservice teachers engaged as members of a global community of learners.

Over the course of 12 years, 38 embedded experts have engaged in the online learning experience. For each iteration, an average of 17 experts actively participated in the asynchronous online discussion and five in the synchronous (café conversation) discussions. These experts were from urban and rural school settings, and had a wealth of experience teaching in K-12 classrooms and in teacher education.

5. Method

As qualitative researchers, we were "interested in understanding how people interpret their experiences, how they construct their worlds, and what meaning they attribute to their experiences" (Merriam, 2009, p. 5). The focus of this qualitative case study research was on the third stage of the experience, where for two weeks preservice teachers and teacher educators were joined by invited practicing teachers or teacher educators in the role of embedded experts. The bounded system was the online discussion forums and the synchronous cafe conversations, which provided an opportunity for preservice teachers to interact with the embedded experts as they shared experiences and discussed strategies, insights, and resources. The following research questions guided the inquiry:

- What were the perceptions of the online experts' experiences in the online international collaborative learning experience?
- What conditions influenced embedded experts' engagement in an online international online collaborative experience?

Institutional ethics approval was received to conduct the study. All experts who had participated over the last five years were invited to participate in the research. Nine experts participated in the study with four from Australia and five from Canada. Their participation was entirely voluntary, and involved a 30 to 40 minute interview. During the interview, they were asked questions

including: From your perspectives, describe how people engaged in the experience; and what did you enjoy about working online with different groups of students and experts? Data were reported as an aggregate. Participant contributions were anonymous and pseudonyms were used.

The interview data were analyzed using thematic analysis. Codes were assigned then sorting of the codes into categories by theme. The themes were reviewed and refined both during the data analysis and in the writing of the article. According to Merriam and Tisdell (2016) "initial set of categories may undergo some revision. This process of refining and revising actually continues through the writing up of your findings" (p. 209). Interview data were hand-coded by one author. Following the initial coding, the two authors then reviewed the data.

6. Discussion and Findings

This section begins with the participants' demographic information in terms of their role and area of expertise. This is followed by the discussion of the findings from the interview data, which is presented by the following themes: technology, engagement, theory/practice links, and conditions that influence embedded experts' participation.

6.1 Demographics

All of the interviewees were female. This was representative of the collective because only 4 of the 38 experts were males during the 12 years of the experience. In Table 1, an overview of the experts is shared including their background, location and area of expertise. The majority of the experts were teacher educators. These experts brought to the learning their experience and expertise. As reported by Kate, "I *can share the student perspective, the parent perspective, the teacher perspective and help everyone to help understand how it all comes together*". Nicole's perspective on her participation was that "*I thought I had something to share*". This sharing sentiment was evident with all experts.

Table 1
Summary of Embedded Experts' Roles and Areas of Expertise

Pseudonyms	Background	Location	Area of Expertise
Yvette	Teacher educator	Canada	Indigenous Perspectives

Tabatha	Started as a teacher expert and became a teacher educator during their participation	Australia	Special Education
Nicole	Teacher	Canada	Technology integration
Kate	Teacher educator	Australia	Special Education
Bella	Started as a teacher expert and became a teacher educator during their participant	Canada	EALD
Amanda	Teacher educator	Australia	EALD
Julia	Teacher	Canada	Cyberbullying
Jenna	Teacher educator	Australia	Indigenous Perspectives
Chloe	Teacher educator	Canada	Technology integration

Over all the experts enjoyed this online collaborative experience. All had participate in the experience multiple time. Yvette commented, "*what I enjoyed about working with the international students that they were quite intrigued about what we are doing here in Canada*" For example they discussed "*how reconciliation is conceived of within an Australian context verses that of a Canadian context. Those are kind of interesting areas*". Julia reported how various resources have been shared among the students and the experts. She said, the preservice teachers "*shared websites, they've shared articles and they've share quotes. And over the years I have shared a lot of my resources as well*."

The experts found it to be a valuable learning experience. For example, Bella appreciated the different points of view and perspectives that were shared. She commented, "*I found that very stimulating...I found that very interesting and a changing and rather exciting in a way*." Julie reported, "*I just like the collaborative approach to learning. I just think it's really valuable. I really enjoy participating, communication and collaborating with technology*". As Kate,

described her experience she noted, "*I just really enjoy it ... I love to see people learning and developing ... you just get that buzz*". Overall, the experts enjoyed the opportunity to participate in the online experience.

6.2 Technology

In this learning experience, technology afforded communication from any location which made geographical distance irrelevant (Nobles, Dredger, & Gerheart, 2012). Within this learning community environment, preservice teachers, teachers, and teacher educators shared, collaborated, remixed, and refined resources, experiences, and examples as part of a mutual learning experience. This was afforded by the virtual classroom that allowed community members from various locations around the world to contribute to the learning of self and others. Research has indicated that learning outcomes and academic performance is increased when working in collaboration (Dixson, 2015).

In the interview, Kate who is a special education teacher educator, reflected that *"technology is both an enabler and a barrier".* Chloe, an experienced online educator, shared that "*when you come into an online learning space you don't have tables and chairs, you don't even have walls, so you don't know where you are, where to sit, who to talk to*". Teaching and learning online is complex and requires different ways of working. Moving discussions online provides different constraints and affordances, and these change as different kinds of online interfaces were used over the last 12 years.

When reflecting on the online environment for the discussions, Yvette shared that she thought there were a number of limitations because *"you are dealing with very sensitive material ... [and] rely on print and text".* Over the 12 years, three key technology interfaces for asynchronous discussion were used - initially Blackboard (LMS), then Wikispaces, and finally Moodle (LMS). The online environment was changed due to ease of access for students, for experts, as well as for accessibility as universities changed LMS platforms. Bella commented that different interfaces enabled access to different types of resources and ways to present information (e.g., graphics, embedded video, uploading of digital artefacts). Due to their inexperience with some of the interfaces in the online environment, some experts had difficulty accessing or navigating within the site. For example, Nicole shared, "*I found it an awkward pathway to get to where I wanted to be in the end*".

"Authentic audiences, varied perspective and a glimpse into the opportunities afforded when … teachers use technology to connect outside of the classroom" (Nobles et al., 2012, p. 344). Affirming, Nicole argued that *"technology ... allow you to create spaces, places for people to really do some good, meaningful learning ... you can guide spaces for collaborative work and for revisiting ... you have created a place for learning"*. Irrespective of the benefits, Yvette

suggested that *"if we are going to use technology for teaching, we need to explore its full potential … to try out new technology is actually what we should be modelling as educators. So even if it doesn't work out, I think we need to keep that energy going"*. Kate reflected, *"I think we need to be better educate ourselves in how to use technology most effectively".* The confidence and competence in using the selected technology in this experience was a factor that influenced both the role and participation of the embedded experts.

Developing the ability to interact and facilitate conversations without the visual presence may be challenging within online environment. For example Tabatha shared, *"I think online learning there is so much more responsibility on the learner"*; if you have them *"in front of you, you can … get them excited, you can try and find out what's going on and pull them in".* Nicole suggested that the preservice teachers *"may know how to log onto Twitter and Facebook and chat with their buddies but to use it as a tool to construction knowledge, it's overwhelming"*. Tabatha also reflected, *"I love the online space, but if you have students that are … fearful of it … or don't wish to engage"* then it is difficult to diagnose misunderstandings or to provide feedback. When thinking about the disadvantages of using technology as a learning and communication medium, Kate commented that it *"requires amazing communication skills"*. Both preservice teachers and embedded experts needed to develop their ability to effectively communicate in a text-based asynchronous environment throughout this experience.

Garrison (2016) stated that "[c]ommunication technologies create new and sustained opportunities to share their thinking" (p. 5). Not only does it make learners thinking visible it also enables the sharing of a wealth of resources and experiences. No longer do educators provide access to and/or transmit information. Rather, in a social constructivist and connected world, they need to create conditions for discourse, creativity, and criticality within technology-mediated learning environments. As such, both preservice teachers and embedded experts need to develop their confidence and competence to utilize the capacity of the affordances of the selected technology to achieve the identified learning outcomes.

6.3 Engagement

The theme of engagement is focused on student engagement in conversation and collaboration as part of learning together. Effective engagement tends to be expressed in action and behaviours displayed by students. For example, it occurs when students intentionally and explicitly consume, create, and contribute to online discussions. They are actively thinking, discussing, interacting with their peers, the content, their instructors (Dixson, 2015) and/or knowledgeable others. From the data, the embedded experts spoke of how with each iteration of the experience there "*was different in how they engaged"* (Chloe). As with all cohorts, interpersonal relationships between preservice teachers, their knowledge and experience of the topics under discussion, their competing demands on time, all contribute to the preservice teachers' level of

visible engagement in the online discussions. Kate indicated sometimes it is a *"bit tricky to get them to engage"* and other times they were "*fabulous in their level of engagement*". Tabatha reflected that there was a range of approaches to engagement, including *"the overthinkers, the group you never hear from, and then there's the inbetweeners".* She went on to reveal *"there is always that group that really get involved, and you think 'oh you're going to be a fantastic teachers'".* Amanda maintained that *"at times there has been terrific interactivity and that's when it really works. So it's go a lot to do with how energized the students are to seek out this form of learning".*

The experts found as they shared more of themselves, there was a change in student engagement. Chloe remarked that *"once they found out my background, if they had similar interests then they connected with me." S*he went on to suggest, *"if people don't really know who you are and what your background is they can't engage really well."* Further, Amanda mentioned that *"those who actually engage have been very active in terms of their thinking and their wide reading"; and* we needed to get them hooked, the ones that *"came from second language backgrounds ... they contributed considerably".*

The strategies used by the experts influenced the nature of the student engagement. For example, Chloe considered that "*because I was asking more discovery questions the student became a little bit more interactive and engaged … [I was] purposefully fishing for conversation".* Whereas Kate revealed, *"When I say something a little controversial then I find they respond really well to that."* She also found that *"practical experiences that I have, the actual stories that I had to share with them, I think that's what they responded well to".*

The experts for the Indigenous perspectives forums decided to modify the structure of the discussion during the last few iterations. They found that breaking the big ideas into smaller ones resulted in a change in student engagement. Jenna described previously that students would "*read a reading, write somethings or write their thoughts."* Now with the restructuring for a more guided discussion, Jenna reported, *"I was very surprised at what I considered a very significant shift in how students were reacting … a marked difference in how students were responding."* This example highlights how an embedded expert engaged in modifying the discussion environment so to enhance the nature of student engagement.

Three embedded experts acknowledged that the preservice teachers demonstrated high levels of cognitive engagement. For example, Amanda proffered that the preservice teachers were *"prepared to support their theory with their own experience".* Yvette had a similar view. She stated, *"I really appreciated that sort of collaborative approach that moved beyond individualistic thinking where it was much more about the collective, how can we support our students".* This view was supported by Amanda who attested *"they are really looking for ways to help ...they seemed to be really interested and really digging for information".* When

reflecting of student engagement, Bella mentioned that *"a lot of them were quite passionate and quite interested, and a lot of them have previously experience … you could see passion and people are very curious".* From the experts' experience, they observed the various ways preservice teachers engaged in meaningful ways.

In contrast, Tabatha acknowledged that technology provided a means or that the *"opportunities are enormous".* She went on to say for this to occur, people need to b*e "personally responsible … to be involved, we can't' make them."* Bella suggested that it was hard to get them all involved *"unless the students want to be involved themselves, particularly interest in those kinds of areas".* Similarly, Nicole commented, *"I have always been a little bit disappointed they have not dug in a little deeper".* She went on to say, *"then I remember the level they are at."* For experts, they too needed to have an understanding of the expectations of the experience, as well as where the preservice teachers are in their programs. By having such understanding, it helps to determine what types of supports and strategies can be used to engage them in learning.

Within each online discussion forum, three to four experts were assigned. Having more than one expert helped to share the responsibility and work in responding to the discussions. However, the experts noted, *"when there was a lot of engagement, it could be overwhelming."* Nicole shared how it is *"complex and sometimes you have so many questions you don't know what questions you should be asking. And [the preservice teachers] are just overwhelmed with the newest of what they are encountering."* At times, the quantity of postings and the nature of the engagement in the discussions became somewhat of a roadblock to the shared learning. As Bella reported, *"so many threads, so many questions, so many challenges".*

The range of engagement levels should not be surprising, as it is similar in traditional brick and mortar teaching and learning contexts. However, asynchronous online discussions which promote learning as a community are considered to be more personal, equitable, and reflective when compared to face-to-face classroom discussions (Swan, 2005). Under conditions where high levels of engagement occur "transformation takes place as ideas are formed and reformed as a result of experiences, feedback and reflection" (Solvie & Kloek, 2007, p. 9). To achieve such rich engagement, requires not only the environment to be designed for robust engagement, but also providing both students and experts with skills and strategies to allow them to work in a productive and effective manner to support the engagement in learning.

6.4 Theory/Practice links

This theme examines the theory/practice nexus and the relationship between experience and knowledge. In this section, we consider theory to be the wide range of knowledge, skills and theories taught in the teacher education program (Zeichner, 2010). Whereas, practice is

considered to be the pedagogical practices or teaching activities undertaken by a classroom teacher. The authors acknowledge that theory-practice relationship is complex and intertwined.

A goal of the international experience was to provide both the preservice teachers and the embedded experts with an the opportunity to learn with and from each other and to "embrace multiple kinds of knowledge and multiple ways of knowing" (Swan, 2005, p. 12). Yet from the research literature, "[t]eacher educators wonder why theoretical best practices are not transferred to the classrooms of their former students "(Nobles et al., 2012, p. 351). Nicole provides insight into this challenge. She suggested the *"shifting of the role from teachers to … one where are all learners ... is uncomfortable [for experienced teachers], it's really uncomfortable for those young, first year student teachers*" or as preservice teachers.

One example of the interaction of theory and practice was in the discussing of Indigenous perspectives. Yvette observed and commented that the preservice teachers in Australia shared a similar *"pedagogy of ignorance"* to educators in Canada. She suggested that she "*was able to give them some authentic accounts of the Canadian experience … and ... they were enthralled. I think with hearing from the voice of people in community about their experience"* and that preservice teachers *"were able to draw the parallels with the aboriginal experience in Australia".*

A second example of this nexus was with Tabatha who was *"trying to get them to rethink their paradigm"* to *"think about students with disabilities in inclusive environments in a different way."* She went to say, *"You don't change people's minds overnight... I'm a little part of the conversation"*. Kate also noted that she shared with the preservice teachers *"you don't have to agree … you just have to think about it*". She also suggested that this type of teaching is *"probably the benefit of the online"* we can *"challenge notions and not just deliver content"*. The asynchronous discussion environment provided opportunity for people to read each other's' comments and thoughts, as well as provide time for reflection and to find and share resources or literature that support their perspectives. It is in this space that the preservice teachers experience multiple perspectives, which help to inform their thinking and practice.

The experts brought into the conversation experiences but also the current reality in teaching and learning. Within their role, they were disrupting preservice teachers' perceptions and images of teaching and learning. Tabatha in the conversation about special education found "*there was a lot of ….. fear of teaching students with disabilities*". Kate reported that "m*ost of them don't have a lot of understanding in special education and so it's very probably very daunting for them*". She commented that "*any online learning discussions like this you just learn so much*". She went on to say "*attitude change is the key ...working in delivers context is challenging yourself, your own ideals, your own assumptions … and we have a lot of ideals … and underlining hidden assumptions*". Further, Bella revealed that she was trying to *"bring reality into the situation"*,

and to *"give them skills to be able to adapt to different situations … while being encouraging".* In addition, Kate commented that to make the theory come alive *"I used ... lots and lots of personal examples".* However, Nicole lamented that she was *"surprised that they [as preservice] teachers are … falling back on the way they were taught, and the way they were taught, is still instruction as opposed to construction".* Nicole's comment is important, given if we want to change the pedagogical practice of teaching, then it begins with the lived experiences provided to preservice teachers. The images they are exposed to during their education program will impact how they will be teachers in their future classrooms.

The educational experience of this online collaborative experience offered a concrete opportunity for preservice teachers to discuss how the complex theoretical ideas studied in their initial teacher education program might look like in practice. The experts provided examples of how the big ideas in education may be enacted within the school classroom. Preservice teachers rarely get the opportunity to discuss theory with mentor teachers within a professional experience placement because the focus there is on practice. Therefore, it is key for preservice teachers to have an opportunity to bridge that gap between theory and practice because "educational theories that are taught in teacher education – serves as a resource for teaching in the practicum" (Hascher & Hagenauer, 2016, p. 22).

6.5 Conditions that influence embedded experts' participation

Five key conditions influenced the embedded experts' experiences with the online collaborative experience. First, preservice teachers and the experts were in a reciprocal learning relationship. Reciprocal learning at both the expert and novice levels, with the experts learning from other experts and in some cases the preservice teachers. Both Chloe and Julia commented on the richness of connecting students with experts and learning about common topics with people from different countries. Bella shared that it was a good learning experience for herself, "I *really appreciated … felt it was almost like a privilege that I was able to participate because I was able to learn a lot from the conversation and from other people*". However, Chloe noted, "*I don't think the students realized that we really were a mentor or a resource in general that they could benefit from.*" To take advance of the reciprocal learning experience, preservice teachers need to be open to engage in asking questions, sharing, as well as participate in extending and deepening the learning with the experts.

Second, the role of the embedded expert is more than being a mentor or someone who transit information. Rather, through this experience the expert may have an impact on preservice teachers' understandings and practice. Jenna remarked, "*it helped to give me some clarity around my own practice*". For Bella, she reported feeling "*a bit pretentious*". She went on to say, "*I felt as though I was able to explore a lot of my own thoughts about the way students learn, the*

way that we can help them learn, put things into perspective." For Tabatha, participation in the experience provided the opportunity to expand the audience who receives the message about effective inclusive teaching. "*I appreciate the opportunity to at least continue that message, perhaps with a group of student who wouldn't be taking special education*".

Third, there was a challenge in developing a learning relationship in the online environment within a two-week period. Jenna spoke of the importance of trust and relationship building. As Tabatha described the challenge is the short timeline makes it difficult to build trust. As well the role of synchronous and asynchronous forums impacted the relationship building given not all experts were in a synchronous session. Nicole shared, "*I don't have any relationships with them and as a teacher it was always important to establish good relationships with learners … That was really important and it was really trick to do that with just popping in for a few weeks*".

Fourth, time can be a barrier. In the two-weeks, the experts were expected to be online several times a week. With three or four experts in an online forum, it was hoped there be at least one expert responding per day. Kate remarked, "*I think we could make a huge difference, but we just have such little time to do it. But you did the best with what you got*." The challenge some found was to find the time to be online. Kate noted, "*It takes a lot of time, it takes a lot of energy but I keep coming back because every time I go … I think I have made a difference*". Similarly, Julia commented that "*I felt kind of bad sometimes because I couldn't get to everyone".* This was especially difficult when there were many posts in the forum. It was noted by Tabatha, there has *"been some really in-depth conversation across the years … in the online space I spend a lot more time thinking about my response … it is enormously time consuming … and I think that's probably what limits the depths of the conversation*". It is one thing to find the time to read and respond as part of the critical discourse, it is another to have the time to reflect and respond in a deep and thoughtful manner. Finding a balance in terms of time is complex and challenging.

Fifth, a more planned approach was needed to help the embedded experts interacting in the online environment. Chloe felt she was "*sitting out in a loose network*". As facilitator, careful consider needs to be given to how to orientate the embedded expertise and help them to be prepared for the work they will complete online for the two weeks. Amanda argued that experts need to "*put in more time meeting the other experts*". They will get to know how they are and how they will interact in the online environment. Jenna believed as an expert that she need to have "*a better understanding of what is the goal*." This would help them to determine their level of engagement, as well as role. Bella found there "*seemed to be a sense of intellectual rigor*". Using a more planned approach before the start of the embedded expert segment of the learning experience, would provide an opportunity to talk about expectations, get to know each other and address questions they may have before going online.

7. Implications

Based on reflection of the analysis of the embedded experts' data, three implications were identified that need to be addressed when designing and leading online learning experience which included embedded experts in online critical discourse. First, the facilitators need to be purposeful and intentional in the selection of the technology. The affordances of the technology need to support the identified learning outcomes. However, it should not be presumed that the design of the online space meets the needs of the experts. Rather, embedded experts need be empowered and supported in customizing the learning. They need to be invited to provide feedback to the facilitators about the design as part of the ongoing improvement cycle.

Second, embedded experts bring a wealth of experience, passion for the profession, and stories from the field. When working within a text-based asynchronous environment, these individuals may not have the confidence or competence to engage well in the online environment. They may need assistance in developing confidence in using the particular technology, in facilitating online discourse, and/or being able to thinking on their feet when responding in a synchronous communication environment. As such, an orientation needs to be provided that allows them to develop a familiarity of the expectations and of the online environment. They need to have an opportunity to develop their capacity in engaging with students. They need to develop their confidence and competence in written online communication, as well as with synchronous communication.

Third, the pedagogical implications for facilitators is that they need to have the knowledge of potential experts, particularly do they have the capacity to engage in rich online discourse with students. Further, as the facilitators may design the structures and parameters of the online environment, they need to accommodate to allow for the balancing of the organic and generative evolutions based on the experts and their responsiveness to the preservice teachers. The pedagogical environment needs to allow for the development of community among the experts and with the experts and preservice teachers.

8. Limitations and Future research

As with all qualitative research, there are limitations to this study. A more diverse and large sample of participants would assist in being able to make generalisable conclusions. The sample of participants in this study were from an expert pool. They may provide a bias view of their perceptions given the positive experiences shared. Also, data analysis and coding in qualitative research is impacted by the coders beliefs, values and philosophy. Although we acknowledge the limitations, the authors have provided rich descriptions of the participants, context, and methods,

which may enable other teacher educators within similar context to use and/ modify the identified implications.

Moving forward with this research, there are two areas of study. The role and impact of embedded experts in different disciplines, particular professional programs could be explored. Along with the students' perceptions of the role of the expert and how that impacted their degree and nature of engagement.

9. Conclusion

In answering the first research question, the embedded experts had positive involvement when participating in the online international collaborative experience. They perceived that the online space for the experience was both an enabler and a barrier for the experts. They shared that preservice teachers engaged in a range of different ways in the online space and acknowledged that they contributed to the linking of theory and practice. In answering the second research question, there were a number of conditions which influenced the experts' perceptions and engagement in the online space. Firstly, it was a reciprocal learning experience, meaning that both the experts and the preservice teachers gained new knowledge through the experience. Secondly, the expert role went beyond that of providing information. Thirdly, the short time made it difficult to develop learning relationships with the preservice students, and the short time frame was also a time barrier for their participation. Finally, the experts reflected that consideration needs to be given to the structure and design of the online learning experience.

The affordance of online collaborative environment provides an opportunity for experts to be embedded in the learning for extended periods of times that can cross time zones and geography. Technology helps to enable global conversations between novice and expert educators. Further, it provides preservice teachers and embedded experts with a forum to interrogate educational concepts and topics beyond their local community and cultures.

From our review of the literature, very little research has been conducted on the role or perspectives of embedded experts in global online collaborative learning. This article contributes to the scholarship of online learning and teaching by revealing the nature and role of embedded experts. The embedded expert can bring expertise, share stories from the field to provide validation, challenge perceptions and mindsets and disrupt images of teaching. These experts share a variety of informed perspectives that may assist preservice teachers in developing complex understandings of contemporary teaching and learning topics. At the same time, this learning experience provides a model for preservice teachers to use online collaborative technology in their own classrooms.

References

Ally, M. (2008). Foundations of educational theory for online learning. In T. Anderson (Ed.), *Theory and Practice of Online Learning* (2nd ed.) (pp. 15–44). Athabasca, AB: Athabasca University. Retrieved from http://www.aupress.ca/books/120146/ebook/01_Anderson_2008-Theory_and_Practice_of_Online_Learning.pdf

Dixson, M. (2015). Measuring student engagement in the online course: The Online Student Engagement Scale (OSE). *Online Learning Journal, 19*(1). doi:10.24059/olj.v19i4.561

Fowler, C., & Mayes, J.T. (1999). Learning relationships from theory to design, *ALT-J*, *7*(3), 6-16. doi: 10.1080/0968776990070302

Garrison, D. R. (2016). *Thinking collaboratively: Learning is a community of inquiry*. NY: Routledge.

Garrison, D. R., Anderson, T., & Archer, W. (1999). Critical thinking in a text-based environment: Computer conferencing in higher education. *Internet and Higher Education, 2*(2–3), 87−105.

Hascher, T., & Hagenauer, G. (2016). Openness to theory and its importance for pre-service teachers' self-efficacy, emotions, and classroom behaviour in the teaching practicum. *International Journal of Educational Research, 77*, 15-25. doi: 10.1016/j.ijer.2016.02.003

Jonassen, D. H., Peck, K. L., & Wilson, B. G. (1999). *Learning with technology: A constructivist perspective.* Upper Saddle River: Prentice Hall, Inc.

Kehrwald, B., Reushle, S., Redmond, P., Cleary, K., Albion, P., & Maroulis, J. (2005). Online Pedagogical Practices in the Faculty of Education at the University of Southern Queensland. Retrieved from https://eprints.usq.edu.au/131/1/lfi_05_01.pdf

Lock, J.V. (2018). Personalizing educational development for online music educator: A coaching approach. In C. Johnson & V. C. Lamothe (Eds.), *Pedagogy Development for Teaching Music Online* (pp. 306-319). Hershey, PA: IGI Global Publications.

Lock, J.V., & Johnson, C. (2018). Playing together: Designing online music courses using a social constructivist framework. In C. Johnson & V. C. Lamothe (Eds.), *Pedagogy Development for Teaching Music Online* (pp. 183 -201). Hershey, PA: IGI Global Publications.

Lock, J. V., & Redmond, P. (2006). International online collaboration: Modeling online learning and teaching. *Journal of Online Learning and Teaching, 2*(4), 233 - 247. Retrieved from http://jolt.merlot.org/vol2no4/lock.htm

Lock, J. V., & Redmond, P. (2009). Working collaboratively on the digital global frontier. In J. Salmons & L. Wilson (Eds.), *Handbook of Research on Electronic Collaboration and Organizational Synergy* (pp. 177-191). New York, NY: Information Science Reference.

Lock, J.V. & Redmond, P. (2011). International online collaboration: Giving voice to the study of diversity, *One World in Dialogue, 1*(1), 19 - 25. Retrieved from http://ssc.teachers.ab.ca/SiteCollectionDocuments/OneWorldInDialogue/OneWorld%20inDialogue%202011%20v1n1.pdf

Lock, J.V**.,** & Redmond, P. (2015, March). Empowering learners to engage in their online assessment. In S. Koc, P. Wachira & X. Liu (Eds.) *Assessment in Online and Blended Learning Environments* (pp. 21-38). Charlotte, NC: Information Age Publishing.

Merriam, S.B. (2009). *Qualitative research: A guide to design and implementation.* San Francisco, CA: Jossey-Bass.

Merriam, S.B., & Tisdell, E.J. (2016). *Qualitative research: A guide to design and implementation* (4th ed.). San Francisco, CA: Jossey-Bass.

Nobles, S., Dredger, K., & Gerheart, M. D. (2012). Collaboration beyond the classroom walls: Deepening learning for students, preservice teachers, teachers, and professors. *Contemporary Issues in Technology and Teacher Education, 12*(4), 343-354.

Oliver, B. (2007). Send me in a coach! *Just for the ASKing! IV(IX).* Retrieved from http://www.justaskpublications.com/just-ask-resource-center/e-newsletters/just-for-the-asking/send-me-in-coach/

Palloff, R. M., & Pratt, K. (1999). *Building learning communities in cyberspace: Effective strategies for the online classroom*. San Francisco: Jossey-Bass Publishers.

Redmond, P., & Lock. J.V. (2006). A flexible framework for online collaborative learning. *The Internet and Higher Education, 9*(4), 267-276. doi: 10.1016/j.iheduc.2006.08.003

Redmond, P. & Lock, J.V. (2009). Authentic learning across international borders: A cross institutional online project for pre-service teachers. In C. Maddux (Ed.), *Research Highlights in Technology and Teacher Education 2009* (pp. 265 - 273). Chesapeake, VA: Society for Information Technology and Teacher Education (SITE).

Redmond, P. & Lock, J. (2013). TPACK: Exploring a secondary pre-service teachers' context. In L. Liu, D. Gibson & C. Maddux (Eds.), *Research Highlights in Technology and Teacher Education 2013* (pp. 101-108). Chesapeake, VA: Society for Information Technology and Teacher Education.

Redmond, P. & Lock, J. (2015). Investigating pre-service teachers' inquiry into Indigenous perspective. In P. Redmond, J. Lock, & P.A. Danaher (Eds.), *Educational Innovations and Contemporary Technologies: Enhancing Teaching and Learning (pp. 133– 149)*. Hampshire, UK: Palgrave Macmillan.

Redmond, R., Lock J., & Smart, V. (2017). Pre-service teachers' perceptions about identifying, managing and preventing cyberbullying. In L. Liu & D.C. Gibson (Eds.), *Research Highlights in Technology and Teacher Education 2017* (pp. 109-116). Waynesville, NC: Association for the Advancement of Computing in Education (AACE).

Redmond, P., & Lock, J. (2019). Secondary pre-service teachers' perceptions of technical pedagogical content knowledge (TPACK): What do they really think? *Australasian Journal of Educational Technology*, *35*(3), 45-54. doi: https://doi.org/10.14742/ajet.4214

Scardamalia, M., & Bereiter, C. (2003). Knowledge building. In G. W. Guthrie (Ed.), *Encyclopedia of Education* (2nd ed.) (pp. 1370−1373). New York, NY: Macmillan Reference.

Solvie, P., & Kloek, M. (2007). Using technology tools to engage students with multiple learning styles in a constructivist learning environment. *Contemporary Issues in Technology and Teacher Education, 7*(2), 7-27.

Smith, A. (2007). Mentoring for experienced school principals: Professional learning in a safe place. *Mentoring and Tutoring, 15*(3), 277-291.

Swan, K. (2005). A constructivist model for thinking about learning online. In J. Bourne & J. C. Moore (Eds), *Elements of Quality Online Education: Engaging Communities*. Needham, MA: Sloan-C.

Winch, C. (2017). Professional knowledge, expertise and perceptual ability. *Journal of Philosophy of Education, 51*(3), 673-688.

Zeichner, K. (2010). Rethinking the connections between campus courses and field experiences in college- and university-based teacher education. *Journal of Teacher Education, 61*, 89–99.