Online global collaboration: Affordances and inhibitors

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New teaching and learning approaches are emerging through the use of technology including online global collaboration. Educators involved in global collaboration forge external relationships with others beyond their immediate learning environment. They modify and adapt the curriculum to include global learning opportunities for their learners. Global collaboration provides opportunities for rich global, cognitive, social, cultural and life-changing experiences to their students. Online global collaboration broadly refers to geographically dispersed educators that use online technologies to learn with others beyond their immediate environment to support curricular objectives, intercultural understandings, critical thinking, personal, social and ICT capabilities. This paper will report some preliminary findings from an investigation into the perceptions of K-12 educators who facilitate global collaborative learning. Data were collected through semi-structured interviews that were then themed to identify the key affordances and inhibitors to online global collaboration. The paper will provide recommendations for global collaboration in teacher education.

Introduction

Online global collaboration is where partnerships are made beyond the classroom for the purpose of working and learning together on specific goals and co-creating new knowledge. The key factors are the design features of the collaboration, changes made in teaching and learning structures for all collaborative partners involved and use of online technologies (Garrison & Cleveland-Innes, 2005). With the advent of the Internet and new technologies, online global collaboration has evolved from the 1.0 version of information exchange, to the 2.0 version where artefact exchange and discussion as well as information exchange takes place. With the development of faster Internet and better technology tools, online global collaboration 3.0 allows learners to network, collaborate, co-create information and artefacts, and build knowledge together online and share this with others (Lindsay & Davis, 2012).

The practice of online collaboration includes sharing and co-creation including a shift from a world about content to one of context (Collaborative Society, 2013). For the purposes of this paper online global collaboration broadly refers to geographically dispersed educators, learners, classrooms, schools and other learning environments that use online technologies to learn with others beyond their immediate environment in order to support curricular objectives, intercultural understandings, critical thinking, personal and social capabilities and ICT capabilities (Lindsay, 2016). It is important to understand that the term 'global' can also apply to more localised

connections, for example in the same town or state, particularly within close time zones. Benefits of online collaboration can be gained from working with other educators in contexts different from our own but within the same state. For example, a Metropolitan class working with a remote class will still gain benefits.

Contemporary educators face the challenge of how to leverage the unique opportunities provided by new technologies, especially Web 2.0 online technologies, to not just replicate face-to-face learning experiences, but also redefine the learning task (McKenzie, 2004). This paper will report some preliminary findings from an investigation into the perceptions of educators who facilitate global collaborative learning. Data were collected through semi structured interviews which were then themed to identify the key enablers and inhibitors to online global collaboration. The paper will also provide recommendations for those in higher education, specifically in teacher education, who are considering embedding online global collaboration into courses to support new practices and effective teaching using technology.

Collaborative learning

In the broadest sense 'collaborative learning' is a situation in which two or more people learn or attempt to learn something together. Dillenbourg (1999) stated educators have struggled with a definition of collaborative learning that includes multidisciplinary processes and enhanced learning outcomes. As distinct from cooperative learning

where the required tasks are distributed amongst the learners (Laurillard, 2009), in the collaborative learning process learner's share and discuss and build on the outputs of their peers or collaborative partners. Fullan, Langworthy, and Barber (2014) believed that collaboration (working in teams to learn from and contribute to the learning of others using social networking skills) is a "deep learning task" (p. 22) and a skill for the future. Work in the future will require skills that are cross-platform, freelance and flexible, local and global (Boudreau, 2016).

Connected learning makes use of new technology tools to build online networks and learning communities (Siemens, 2006). Collaborative learning enables community building with a focus on individual and collective learning capacities (Ito et al., 2013). Nussbaum-Beach and Hall (2010) shared that connected learners direct learning, connect, and collaborate with others at a distance through ubiquitous technologies. Connected learning is influenced by the need for pedagogies that are more personal, social and participatory with special reference to Web 2.0 tools (McLoughlin & Lee, 2010). It is related to and is heavily influenced by connectivism (Siemens, 2005). Connectivism is considered a learning theory for the Digital Age and is based on principles from chaos, network, complexity and self-organization theories (Siemens, 2005). It acknowledges that connections can be made through computer networks and social networks. If educators see knowledge building as an outcome of different experiences and sharing a diversity of opinions, online collaborative learning provides an avenue for this type of learning.

The Internet has changed and continues to change the way learners connect by providing new forms of interaction and social construction of knowledge. Today's learners have grown up collaborating using online technologies (Tapscott, 2009) and these provide a platform for engaged learning, deeper understanding and exciting collaborative learning outcomes. The educator's role is critical for making a success of opportunities afforded by technology in online collaborative construction environments (Garrison & Cleveland-Innes, 2005; Laurillard, 2012).

Why is global collaborative learning important?

Purposeful connections between classes that lead to online global collaboration are important for a variety of reasons. Firstly, it prepares learners to be globally competent and act on issues of local and global significance. Hanvey (1982) discussed the "attainable global perspective" (p. 162) and introduced dimensions including cross-cultural awareness and knowledge of global dynamics. A succinct definition is provided by The

Asia Society, "Global competence is the capacity and disposition to understand and act on issues of global significance" (Mansilla & Jackson, 2011, p. xii). Lindsay (2016) extends this to include "cross-cultural skills and understanding needed to communicate outside one's environment" (p. 143).

Secondly, online global collaboration provides a focus for digital and online technologies. As a disruptive, immersive and ongoing innovation, the ability to connect beyond the classroom builds skills in the use of new or emerging tools for online and ubiquitous computing. The practice of online collaboration goes beyond merely integrating technology and working virtually with others in the world, it provides new understanding about the power of technology for humanity (Lindsay, 2016). Veletsianos (2016) posited that by employing emerging technologies in learning, new ways of viewing the world are also opened up and new "ways of exploring knowledge, scholarship, collaboration, and even education itself" (p. 11).

The third reason why online global collaboration is important is related to moving from a local to global collaborative learning mode and creating a new paradigm for modern learning. Learners can go beyond the textbook to connect, not just with current content, but also with people who are the voice - peers, experts and online communities - while building collaborations for a deeper understanding of the world (Lindsay, 2016). The paradigm shifts to include online collaboration as a norm is shared by Lee and Ward (2013) who stated that "while insular, 'stand alone' teaching has characterized the teaching of a paper-based world, collaborative teaching could well characterize that of an increasingly digital and networked world; a world where collaboration and integration are the norm" (p. 3).

A fourth reason is that online collaboration supports 'glocalisation'. Discussed by Friedman (2007), to glocalise is about respecting differences and applying to the local context without homogenization. The goal is not for one culture to emerge but to find differences as well as commonalities, to absorb international best practices and meld with local traditions. Taguena (2008) shared that, "A glocal approach means presenting global knowledge within a local context that respects human rights. It encapsulates the concept 'think globally, act locally'." Lindsay (2016) posits, "A glocalised curriculum supports global collaborative practices and goes beyond the usual institution handbook declaration of a global approach to community learning" (p. 144).

Internationally, K-12 curriculum outcomes require a commitment to the concepts of global learning, collaborative learning and learning with ICTs. For example, internationally applied ISTE standards for

students (2016) include 'Global collaboration' as one of the key elements, where "Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally". In Canada, one of the outcomes from the ICT curriculum is that "Students will seek alternative viewpoints, using information technologies" (Alberta Learning, 2003, p. 6). Additionally, the Australian Curriculum includes general capabilities which are knowledge, skills, behaviours and dispositions that students are expected to develop during their schooling. One of the capabilities is to "develop intercultural understanding as they learn to value their own cultures, languages and beliefs, and those of others" (Australian curriculum, n.d.). Nations have recognised that in today's world it is important for students to "make connections between their own worlds and the worlds of others, to build on shared interests and commonalities, and to negotiate or mediate difference" (Australian Curriculum, n.d.).

Also, the Higher Education edition of the 2017 Horizon report (NMC, 2017) has indicated that collaborative learning is an important outcome of a higher education qualification and is a short-term trend in higher education for the next one to two years. The report discussed gains related to collaboration including: social, emotional and cognitive gains along with the developing of leadership skills, increased self esteem and higher-order thinking. Technology has enhanced the ability of collaboration to occur online and with others in different geographical locations which can also lead to the development of cultural competencies. Additionally, global collaboration can assist in developing employability or soft skills such as cultural competency, communication, teamwork, problem solving, and self -management, which are essential in the workplace (Minnesota State, 2017). These skills are transferable between disciplines, workplaces and countries as many countries list the same or similar employability skills (La Trobe University, 2013; Minnesota State, 2017; University of Kent, n.d.).

Affordances and inhibitors of global collaboration

Research related to educators as agents of change, qualities of and conditions for implementing online global collaborative projects using ICT (An & Reigeluth, 2011; Kim, Kim, Lee, Spector, & DeMeester, 2013; Laurillard, 2009) showed that inhibitors to adopting new modes of learning with digital technologies not only include hardware and software, but teacher beliefs and attitudes. A multiple case study research design employed by Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, and Sendurur, (2012) examined similarities and differences among pedagogical beliefs and technology practices of educators using emerging technologies. Results suggested

knowledge and skills as well as attitudes and beliefs (described as second-order barriers) not hardware, software and networking issues (known as first-order barriers) are the gatekeepers for the better use of technology for learning. Greenhow, Robelia, and Hughes (2009) found similar inhibitors and affordances to learning using Web 2.0 technologies. Laurillard (2009, 2012) revealed first-order challenges that include infrastructure, access to technology, policies and curriculum development are more easily fixed than second-order challenges, namely teacher attitudes and beliefs.

Arteaga (2012) researched outlier educators who used collaboration to formulate a digital pedagogy and concluded that what is needed is educator professional learning that adopts social interactive practices in conjunction with reorganisation of learning spaces (physical and virtual) to accommodate new modes of knowledge flow, as well as opportunities for learner connection, recombination and re-creation. According to Harasim (2012) Online Collaborative Learning (OCL), which focuses on "collaborative learning, knowledge building and Internet use as a means to reshape formal and informal education in the Knowledge Age" (p. 80) helps move learning from didactic to active. Despite extreme levels of Internet adoption in the real world, teachers are reluctant to embrace new practices using it in the educational world (Harasim, 2012).

Tondeur, van Braak, Ertmer, and Ottenbreit-Leftwich (2017) concluded that effective technology integration should not be a stand-alone event and that teachers' beliefs about 'good' education are a critical dimension in professional development and meaningful use of technology in education. Choi et al. (2016), advised that collaboration and communication amongst students from different countries will not be achieved without cultural and social support. Harasim (2012) stated that through OCL applications there needs to be an emphasis on knowledge work, knowledge creation, and knowledge community. In practical terms Lindsay (2016) alleged that online global collaboration in the classroom means geographically dispersed learners; use of online technologies to forge viable connection and communication; learning that is 'with' not just 'about'; and collaborators who share ideas online and co-create new understandings.

Method

The purpose of this qualitative research was to document and analyse the experiences of educators who had implemented online global collaboration in the classroom and to identify affordances and inhibitors of online global collaboration. After ethics approval was gained K-12 teachers, solicited through the authors' professional and

social networks, from different parts of the world were invited to share their online global collaborative experiences in a one-hour semi-structured interview. The participants in the study were experienced online global collaborative educators who had been involved in an extended online global collaboration that was continuous for at least six weeks. The 'six weeks' criterion was chosen as this is a significant amount of time to have built a collaborative relationship with one or more classrooms at a distance and possibly co-create learning outcomes. Typical examples of this include The Global Read Aloud (6 weeks in length, see https://theglobalreadaloud.com/) and iEARN Learning Circles (8+ weeks, see http://www.globallearningcircles.org/).

A single-case design with embedded multiple units of analysis was chosen for this research (Yin, 2014). The context was K-12 education, the case was the phenomenon of online global collaboration, and the multiple units of analysis were individual educators. The focus of this case study was the lived experiences of educators as they used technology to implement an online experience that was global and collaborative. The research questions for the study included:

1. *What are the experiences of educators who implement online global collaboration?*
2. *What are the inhibitors and affordances for effective online global collaboration?*

Interview response transcripts were created from the audio recordings. The interview data were analysed using an open coding method (Strauss & Corbin, 1990). Data reduction occurred using an inductive process where common themes and categories were identified from the interview transcripts that were in Google doc tables with lines numbered. Each transcript was colour-coded to reflect the theme. Key ideas were coded to major themes and then categorised as either inhibitors or affordances. Direct quotes from the participants (pseudonyms provided) are formatted in italics in the discussion below.

Preliminary findings and discussion

Data was collected through semi-structured interviews from educators teaching in six different countries (n=9), namely Australia, USA, New Zealand, Ecuador, Thailand and Canada. They shared experiences and perceptions of the main enablers or affordances supporting their online global collaborative activities. As shown by Table 1: Brief profile of interviewees, five of them had been teaching for more than 25 years, and were 50 years or older. Their teaching areas included high school, primary school, as well as ICT and library specialists. They had typically been implementing global projects that run for 6 or more weeks and had been involved in online collaboration for a number of years.

Table 1: Brief profile of interviewees

Participant age	Length of time teaching	Grade levels/ subject areas taught	Examples of online projects
3 x 60+	4 x 30+ years	2 x HS (Grades 7-12)	The Global Read Aloud http://theglobalreadaloud.com/
2 x 50-59	1 x 26-30 years	4 x PS (Grades K-6)	Flat Connections http://www.flatconnections.com/
3 x 40-49	2 x 16-20 years	2 x ICT specialist	iEARN learning Circles http://www.globallearningcircles.org/
1 x 20-29	2 x 6-10 years	1 x Library specialist	

In answering the first research question, the experiences of educators who implement online global collaboration is diverse with certain commonalities such as finding ways to connect meaningfully with the world and using new technologies for synchronous and asynchronous collaboration. Donna discussed her experience and stated, "*I've been involved with a network of teachers I never would have even met, would have known, or participated in global collaboration without having these experiences.*" Stella shared,

> I like to work with other people around the world … my students learn from them, rather than reading textbooks or looking things up online that might help them, and I find that they're quite happy once they've connected with people and collaborated with them to go and research online a little more about the area where those people come from.

The second research question investigated the inhibitors and affordances of effective online global collaboration. These will be discussed in the next section.

Inhibitors to online global collaboration

Communication issues were a common inhibiting theme. This included schools not responding, language barriers, and lack of understanding how to communicate with others at a distance because educators had not done this before or were inexperienced in a global context. Being able to communicate online is a skill educators can learn and model so that global project goals are clearly communicated and understood to ensure student success. Reflecting on communication Donna shared, "*I think some of the biggest challenges can be inconsistencies in involvement or communication and it's the same...I sometimes think it's the same whether you are face to face or not*". Lindy mentioned that "*I think that sometimes people see it as ... like how could you actually*

have any kind of connection or relationship with anyone you have never met?" Snyder (2016) found global learning was impacted by teachers not responding in a timely manner, issues with time zone differences and effective communication, or even miscommunication. Jill recognised, *"You can write something or you can speak to someone and you think you know what you're talking about and then you find out well no that's not being interpreted the way I was expecting."*

Many participants shared that **technology infrastructure and access** was inadequate within the school including a lack of bandwidth, closed learning systems like Office 365, closed networks, inconsistent and unreliable technology and policies that prevent technology tools from being used. Stella shared, *"The barriers for us in our small country school initially were technology, access to it. We had a very poor bandwidth so we couldn't do a lot of synchronous-type connections".* Hew and Brush (2007) found resources (as in hardware, access, time and technology support) was the most commonly reported technology integration barrier. In contrast, Ertmer and Ottenbreit-Leftwich (2013) found "Teachers with strong beliefs in the pedagogical value of technology have been observed to overcome these barriers" (p. 177). Snyder (2016) found access to technology and online sites through the Internet, website blocking and filtering, limited bandwidth and technology failures and device allocation caused some schools to exit global collaborative projects. Oran (2011) stressed limits on technology use in schools as a major inhibitor, while An and Reigeluth (2011) shared research showing that 57% of those surveyed perceived lack of technology and lack of time as the top barriers to technology integration.

A **lack of time** on the part of the educator to consider how to apply and implement, and/or sustain online global collaboration was another key inhibitor. Arteaga (2012) identified how time consuming and exhausting online communication and collaboration was amongst outlier educators, especially working across time zones. Oran (2011) had a similar view and revealed insufficient time to teach for global learning. Jill shared *"I just keep coming back to that 4-letter word TIME...the demands from within the teaching role, classroom or whatever, are just escalating. So I think time is the biggest hurdle."*

A **lack of autonomy in the classroom** was indicated by the participants as an inhibitor. Ertmer and Ottenbreit-Leftwich (2010) also found that the context in which teachers work often constrains individual efforts and promotes a reluctance to adopt innovation. In her interview, Janice shared that when blogging with another classroom she was asked to take the blog down. Isolation as an educator and being the only one implementing online global collaboration was shared by many participants, including Lindy who stated,

There is really nobody else in the school … that's doing some of the stuff I am doing in the classroom with my kids. So I feel isolated in that sense and I feel like if I had somebody else, a couple of other people that I could collaborate with we would be able to do bigger and better...not so much bigger, but better and more effective learning experiences for the kids than I am doing right now.

This aligns with Barbour, Davis, and Wenmoth (2016) who revealed a lack of inter-cluster and intra-cluster consistency and cooperation leading to isolated learning, and Oran (2011) who cited lack of contact with others in the same school as a barrier.

Within the school a **lack of priority for global collaboration** was an issue. Stella shared frustration with other activities taking time *"We're so involved with data collection on literacy and numeracy and a lot of those other wonderful personal skills and needs of students that aren't being met as much."* The overcrowded curriculum, being stymied by the evaluation and accreditation process meant there was little room for global collaboration. The focus on content learning rather than process was shared by Meredith, *"A lot of people still believe that it is about the mastery of content knowledge and the recall of content knowledge."* Oran (2011) found that although the curricula did not include global learning educators used it as an alternative to meet standards and skills required.

Oran (2011) and Arteaga (2012) revealed that global collaborative educators were determined to overcome barriers and found ways to connect and collaborate. Arteaga (2012) reinforced that "barriers did not deter them from continued professional social networking. Instead outlier teachers discovered, effected, shared and reflected practical solutions" (p. 143), and "Outlier teachers exercise a philosophy that is based on collaborative sharing of ideas and resources and getting beyond barriers" (p. 148).

Affordances to online global collaboration

Through the semi-structured interviews educators shared key affordances supporting their online global collaborative activities. A commonality was **establishing effective communication between educators** for mutual understanding of the global collaboration project structure including objectives and timeline. Lock and Redmond (2006) revealed that time is required for "various stakeholders to meet, develop shared philosophies, discuss viewpoints about ICT integration, clarify expectations and tasks, and develop a climate of trust to ask questions and negotiate decisions around the work (p. 244). Snyder (2016) shared that appropriate planning and communication supported collaborative

activity, while Stornaiuolo (2016) discussed cosmopolitan activity and how important it was for educators to be able to manage challenging conversations through technology enhanced communications.

A major affordance came in the form of **support from stakeholders** such as administrators (Oran, 2011), parents and other community members. Enlightened support means encouraging educator risk-taking and allowing or accepting failure sometimes. As Stella stated,

I have a very supportive leadership team and parents and community. They just love the fact that the students in our school are no longer, you know, living in their own bubble but they're actually out there interacting with the world. And I find parents particularly are very supportive of that maybe because of our cultural and geographical isolation.

Lindy spoke about a supportive technology director, *"We have a tech director … who was very much for … getting kids to do whatever is out there ... to explore different ways to learn. So he is very supportive so that's a positive thing."* Kim et al. (2013) reinforced this when they stated a crucial condition for change is the active involvement of leadership. Further, Snyder (2016) shared,

Both teachers' and administrators' buy-in was important to integrating digital citizenship, social media, and global collaboration into the middle school curriculum. Policies should reflect buy-in as should teachers and their willingness to learn about new technologies, such as social media tools, to support students taking on the roles associated with digital citizenship. (p. 269)

Some of the participants spoke about **effective technology in the school** leading to improved bandwidth, access to a robust wireless network and hardware and online tools, and having no major restrictions on what could be used for learning, including being able to share learning beyond the classroom. As Lindy shared, *"If we can justify that it is educational they will unblock it for us and we will be able to use it."* The open use of Web 2.0 tools for collaboration was a major affordance to many. As Greenhow et al. (2009) stated, "Web 2.0 technologies enable hybrid learning spaces that travel across physical and cyber spaces according to principles of collaboration and participation" (p. 247).

Participants shared that **a small and trusting global network** (often called a Personal Learning Network (PLN)), helped to engage with those already doing global collaboration. When asked about culture change amongst educators within a school Stella stated, *"They need to understand how to network and how to learn from their network, how to share with them how to add value to it*

and somehow they need to be able to connect with others." Educators overcame barriers through leveraging peers (Snyder, 2016), both internal (within the same school) while external (beyond school boundaries) networking is recommended in order to facilitate collaboration (Kim et al., 2013). An and Reigeluth (2011) found "Appropriate communities of practice or social networks have the potential to provide ongoing support outside formal training" (p. 61).

Affordance came also through **educator experience and beliefs** and the ability to move into more advanced pedagogies and participate in different activities, as evidenced by Jill who commented, *"I like to think that as teachers become a little bit more experienced in their teaching they've got over the nitty gritty of what they're doing in the classroom then they can sort of broaden out a little bit more."* Tondeur et al. (2016) found that qualitative evidence indicated that teachers' experiences with technology were perceived to be an enabler for supporting pedagogical belief change, while belief in the value of collaborative learning leads to more group work (Kim et al., 2013).

Some participants referred to **educator 'personality' or mindset** being conducive to online collaboration through taking a personal interest in connecting and collaborating, as Meredith stated, *"Some of it has been a personal interest finding out how technology can transform and enhance learning for students."* Participants came from different situations therefore it may be harder to generalise, however as global collaborative educators they were collectively determined to move beyond the norm. Research on outlier educators by Arteaga (2012) found this same behaviour, "It was evident that all teachers persevered, acted as creative catalysts for finding solutions to barriers, and held high expectations of self to surpass any barriers and enhance the quality of their teaching through collaboration" (p. 156).

Another benefit of online global collaboration revealed by the participants was **an enhanced awareness of self and one's place in the world** as well as a deeper knowledge of culture and country leading to decreased ethnocentricity and capability to build empathy with others. Union and Green (2013) when studying global projects and the impact on overcoming ethnocentrism concluded that "Web 2.0 technology helped, to a measurable extent, to impede student ethnocentrism and promoted positive working relationships that were related to student ethnocentrism during the global collaborations that were investigated" (p. 122). Global collaborative educator, Stella, revealed, *"I think when we collaborate globally we learn just as much about those other people as we do about ourselves and I think our own personal sense of being an Australian etc. is terribly important as well."*

Implications for Teacher Education in higher education

This research was conducted within a K-12 context and the affordances found in this study can be transferred to learning within teacher education. As previously mentioned, positive attitudes and skills, such as, cultural competency, multi-modal communication, the ability to adopt technology tools for modern learning objectives, problem solving, and a better grasp of the motivations for thinking global while acting local are possible outcomes for online global collaboration. Evidence of educator reluctance to adopt change (Flammia, 2012; Ertmer & Ottenbreit-Leftwich, 2010) indicates that changes are required to teacher education approaches to enable pre-service teachers to apply new ideas in K-12 classrooms (Stevens & Craig, 2012; Kivunja, 2013; Archambault, Wetzel, Foulger, & Williams, 2010). Pre-service teacher learning should include preparation for the knowledge society through collaboration skills and knowledge creation (Resta & Laferrière, 2007); a dynamic curriculum, open communication, social, peer-to-peer and multimodal learning design, global resources, and creation of content through innovative collaborations (McLoughlin & Lee, 2008); and the ability to develop online identities, network and share (Veletsianos, 2015).

Deeper understanding of what OCL is (Harasim, 2012) and how this can foster global collaboration is a necessary skill, as is being able to move beyond cooperative to collaborative learning whereby participants interact throughout the process to co-produce a finished product (Harasim, 2012). OCL also includes cultural competency to create learning relationships and environments (Lock & Redmond, 2011) as well as the confluence of technology and learning theories to empower learners to take greater responsibility over their learning situation and ultimate learning goals (Kang, Bonk, & Kim, 2011).

Teacher education courses have a responsibility for designing learning to provide OCL models and experiences to prepare pre-service teachers to be effective teachers of the digital generation (Kivunja, 2013) and understand the tools and practices enabling online collaborative work with others at a distance (Chandra & Chalmers, 2010). Sobel and Taylor (2005) found that pre-service teachers requested "more exposure, more explicit modeling and demonstration, more cultural information and more candid conversations" (p. 86). Using Web 2.0 tools for collaborative knowledge building gave pre-service teachers the confidence to incorporate these into future teaching practice and shifted the agency of learning from the individual to one that is shaped by the community (Chandra & Chalmers, 2010). Stevens and Craig (2012) shared a framework for teacher education to move from a traditional classroom to open networked learning that includes local and global community engagement and collaborative communities to support emerging and fast-developing technology-infused learning environments. Redmond and Lock (2009) provide an example of what online global collaboration can look like in practice within teacher education.

Educators in higher education also have a responsibility to present models of teaching with technology (Ertmer & Ottenbreit-Leftwich, 2010) as well as design and scaffold practical experiences to support collaboration competency while including global opportunities within and beyond the single institution (Archambault et al., 2010). The iCollab project (see https://icollab.wordpress.com/about/) is one example where several groups of lecturers and students, all involved in higher education courses in different contexts used social media tools to create a flexible environment for collaboration and cooperation and to engage in open, creative and collaborative learning (Cronin, Cochrane, & Gordon, 2016). Although they shared that nurturing global collaboration and networked learning in higher education required significant effort and commitment, the benefits "[h]ave enabled a new level of creativity and the potential for authentic global and cultural learning experiences - for our students, for ourselves and for a widening global network of educators" (Cronin, Cochrane, & Gordon, 2016, p. 11).

Conclusion

There are a number of limitations to this study. Firstly, the data came from a small sample size (n=9) who may not be representative of educators who participate in global online collaboration more broadly. Secondly, the data came from only one data source and was not triangulated with other sources. Having said that, the participants were from a range of international contexts and the affordances and inhibitors were common across locations. This qualitative study, despite these limitations, contributes to the ongoing discussions about enhancing learning through online global collaboration and therefore the need for teacher education to see the relationship of teaching with technology (Ertmer & Ottenbreit-Leftwich, 2010) and positive student outcomes related to online global collaborative learning. Future research in this area could include replication studies in higher education and with a larger number of educators.

Online technologies provide new ways of connecting and collaborating with others locally and internationally. Common responses to the benefits of global collaboration include fostering intercultural understanding and gaining a global perspective, increased engagement amongst students, the application of new learning modes and building confidence and skills with emerging technologies and in online learning modes. Students realise the power of connecting globally and that technology tools serve a

learning purpose beyond socialisation. However they do require digital access and digital fluency.

Educators across the world are demonstrating the possibilities for engaged and collaborative learning leading to enhanced outcomes by connecting beyond their classrooms. This paper has explored the perceptions of online global educators, presented affordances and inhibitors for global online collaboration, and suggested recommendations for higher education.

As educators in multiple sectors strive to provide learning environments where global discussions occur providing to multiple perspectives, this paper adds to the broader dialogue and debate about online collaboration. There is an expectation that as learners graduate, they have the skills and dispositions to effectively work in groups, collaborate, and co-create new understanding and solve problems in a virtual environment. Online global collaboration is one way to provide them with opportunities to gain these skills.

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