Online Collaborative Learning starts with the Global Collaborator Mindset

Educators who are collaborating globally identify the potential for student-to-student global interactions leading to deeper understanding of how the world works. This qualitative study explored the phenomenon of online global collaboration through interviews with geographically dispersed K-12 educators. The aim was to understand better online global collaborative practices: how K-12 educators leveraged personal beliefs and pedagogies within the school context; and the subsequent impact on educator pedagogical practices. Findings reveal how educators developed a Global Collaborator Mindset (GCM), identified as having attributes of openness, connection, autonomy and innovation. A model of the GCM is presented, along with implications and limitations.

Keywords: Online collaborative learning, Mindset, Online Global Collaboration, K-12, Teacher attitudes/perceptions

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Introduction

The internet has changed and continues to change the way learners connect by providing new forms of interaction and social construction of knowledge through use of appropriate digital technologies. Consequently, a variety of online global collaborative activities are increasingly possible and viable today in K-12 schools. As a paradigm shift, online collaboration as a norm reflects the needs of a digital and networked world (Lee & Ward, 2013). By its very nature, it affords learners of both synchronous and asynchronous modes to connect, collaborate and learn together, requiring key design and implementation skills of educators. In support of this, the International Society for Technology in Education (ISTE) standards (ISTE, 2022) provides a framework for curriculum-based integration of global collaborative learning for students (Standard 7: global collaborator) and for educators (Standard 4: collaborator).

Pertinent research sharing the practice of implementing global education and global projects into the K-12 learning environment spans three decades and reveals diverse situations and experiences (Duggleby & Lock, 2018; Oran, 2011; Riel, 1994). Global projects vary from one-on-one class activities through individual teacher initiatives to organised classroom groups coming together for a more sustained curriculum purpose (Lindsay, 2016). Organised communities such as the International Education and Resource Network (iEARN https://iearn.org/), eTwinning in Europe (https://www.etwinning.net/en/pub/index.htm), and GlobalSchoolNet (http://www.globalschoolnet.org/) have provided structure for longer collaborations. Oran (2011) found that educators engaged in telecollaborative projects through the iEARN network framed a conceptualisation of global education around their own experiences and values and around students' needs and experiences. Although educators lacked formal preparation for global learning and, despite a formal curriculum, they integrated global education into their classrooms because of their personal commitment to it. Research has also focused on using social media and Web 2.0 to make global connections (Arteaga, 2012; Greenhow & Robelia, 2009). Educators who collaborate globally bring rich cultural and life-changing experiences to their students, are comfortable and innovative with online learning and are willing to modify and adapt the curriculum to include global collaborative opportunities (Duggleby & Lock, 2018; Oran, 2011). Global collaboration has been found to enhance teacher communication skills, especially in understanding and sharing ideas (Owens & Hite, 2020). These examples reveal what is possible and highlight those who are already embracing online technologies to connect within and beyond the classroom. Online global collaborative learning in the K-12 classroom has the potential to change learning and educator pedagogical approaches fundamentally. By implementing authentic online global collaboration, educational organisations could amplify learning outcomes through improved teacher and student engagement and enhanced global competency and intercultural understanding.

There is little research on what competencies, beliefs, mindsets and practices educators adopt to implement online global collaboration. This study addresses that gap in the literature

related to K-12 educators with a focus on learning supported by online global collaboration in the area of educator beliefs about pedagogy and technology. This paper aims to present research into the phenomenon of online global collaboration and elements contributing to educator readiness and ability. The paper then presents a conceptual Global Collaborator Mindset (GCM) model for implementation across education sectors promoting teacher online global collaboration.

Background

Terminology for learning that is online and potentially collaborative includes Computer-Supported Collaborative Learning (Stahl et al., 2006), telecollaboration (Harris, 1998), online collaborative learning or collaborativism (Harasim, 2017) as well as online global collaboration (Lindsay et al., 2012). However, the lines are often blurred as to whether the online collaboration is local (within the same class or institution) or whether it is more global (between classes or institutions). For this study, online global collaboration is defined as geographically dispersed educators, schools and learning environments that use online and open technologies to learn with others beyond their immediate environment to support curricular objectives, intercultural understandings, critical thinking, personal, social and ICT capabilities (Lindsay, 2016).

Collaborative learning

Collaborative learning has a theoretical basis in social constructivism, where social interaction helps learners construct meaning through knowledge and understanding (Laurillard, 2009). Social constructivism puts pedagogical emphasis on the role of collaboration amongst students and educators where the student is more actively involved (Harasim, 2017). Collaboration, the building of something through participation and negotiation with partners, is pedagogically valuable because it takes coordination, continued attempt, construction and shared conception to drive the iteration (Laurillard, 2012). Dede (2010) recognised the shifting nature of collaboration becoming a more sophisticated skill set where 21st-century workers increasingly accomplish tasks through mediated interactions with peers halfway across the world with whom they may never meet face-to-face.

Although research by Riel (1994) and Harris (1998) touched on it earlier, research by Lock (2015) into the paradigm shift of education and the online global classroom concluded that teacher capacity to design and implement learning for a global-ready classroom requires a philosophical shift to constructivist learning as well as the development of new practices. Above all, educators need guidelines to design global collaborative learning experiences and move from a singular learning experience, which is often synchronous, so that students learn with and from each other anytime and anywhere in the world while building knowledge collaboratively over time (Lock, 2015).

Educator beliefs and attitudes

Educator's beliefs about teaching and learning play an important role in transforming classrooms through the use of technology (Ertmer, 1999, 2005). Leppisaari and Lee (2012) found that challenges to online global collaboration included the attitudes and habits of individual educators making collaboration successful or not. Ertmer (1999, 2005) examined whether increased and prolonged technology use prompted a change in practice and pedagogical beliefs and found that once 'first order barriers' are addressed (e.g., access to hardware, software and networking) 'second-order barriers' are the major barriers to change. These are intrinsic to the teacher and include attitudes, values and beliefs about the efficacy of digital learning in the classroom and educator unwillingness to change (Ertmer et al., 2012). Technology availability does not in itself change teacher-centred practice and beliefs (Palak & Wells, 2009), and technology integration can be teacher-centred with value-driven decision making based on teacher perception of the environment (Kopcha et al., 2020).

A 'mindset', referring to a person's attitude, beliefs and values, can be either negative or positive (Duffy, 2009) and is an enabler or barrier to new ideas and practices. The non-neutrality of technology, the cognitive effects of different technologies, such as Web 2.0 and the change towards flexibility and connectivity, fosters different mindsets or ways of thinking (Harris et al., 2009). Educators and organisations' mindsets around existing paradigms can become very rigid, and they

are often reluctant to change (Duffy, 2009). However, when communication technologies are leveraged for global connections and interactions, shifts in beliefs about learning can foster a new mindset (Nussbaum-Beach & Hall, 2011; Sadler & Dooley, 2018).

A disposition towards global learning that leverages personal experiences and values, as identified by Oran (2011), requires a global mindset, defined by Gupta and Govindarajan (2002) as combining openness and awareness of diversity across cultures. In an education context, Snyder (2016) revealed that a global mindset needs to be coupled with skills in social media and global collaboration to prepare for the future and become productive digital citizens. In contrast, Klein (2017) argued for an 'asset' mindset that, when found in educators, allows them to approach global connections with empathy and the expectation of equality between partners. In the OECD PISA Global Competence Framework (Piacentini et al., 2018), the term 'global mindedness' refers to having a key disposition to global competence, inferring that globally-minded people are willing to engage with differing world perspectives and build empathy with others.

Global interactions and collaborations are best afforded by a constructivist model utilising digital and online technologies in conjunction with changed mindsets. How educators achieve this and what model or framework may support further adoption informs the research question that guided this study: How do educators' beliefs about learning and teaching influence their engagement in online global collaboration?

Method

This research aimed to determine how K-12 educators leveraged personal beliefs and pedagogies within the school context to implement online global collaboration in the classroom, thereby answering the research question. This study employed a case study research design based on a single case study (Yin, 2014). The research design was one case study bounded by the online global collaborative experience (the phenomenon) with multiple embedded units of analysis (the K-12 educators). It is through a case study approach, utilising open-ended interview questions and a semi-structured interview design, that interpretivist research leads to more comprehensive and more

in-depth information about a person and a situation and to deeper understanding about what works best in educational practice.

The scope of this qualitative study was educators in K-12 learning environments and included participants from different countries, school systems and roles within the school. In Phase 1 of the design, an online survey was developed and distributed via social media and email to personal and professional networks of the research team. The survey collected holistic data in order to select suitable educators for the Phase 2 semi-structured interviews. This included demographics, responses based on experience in online global collaboration, the use of synchronous and asynchronous digital tools, the definition of terms such as 'global collaborator', as well as barriers and enablers and levels of participation in online global collaborative activities. This approach was confirmed by Yin (2014) whereby surveys or other quantitative techniques to collect data about the embedded units of analysis may rely on holistic data collection strategies for studying the main case. The survey data is not being reported on in this paper. The criteria for Phase 2 selection was acknowledgement by the educators of implementing an online global project of at least six weeks in length thereby indicating participant readiness and capability in online global collaborative learning.

Interviewee (n=8) data (Phase 2) were collected through online, 60-minute semi-structured interviews that were recorded and then transcribed. Participants (pseudonyms used) were asked to describe how beliefs about the use of online and other digital technologies influenced the way they approached online global collaboration. They were also prompted to describe what skills and attitudes were present or needed amongst teachers for online global collaboration to take place.

An iterative and structural approach to data analysis was taken for the semi-structured interviews in conjunction with visual representation of data when presenting the global collaborative educators. Interview data were transcribed into Google docs, strokes of colour applied across sections of text for each theme and sub-theme and provisionally analysed with an open coding method (Strauss & Corbin, 1990). An inductive, holistic process of data reduction helped

delineate common themes and categories from the interview transcripts (Saldaña, 2013). In response to a need for deeper and broader qualitative data analysis and to make vital connections between data sets, NVivo 11 software and manual coding were employed. The process taken, informed by the interview coding work of DeCuir-Gunby et al. (2011) with reference to the coding schedule structure of Hay (2017), included personal memos and free writing leading to categories or codes revised and refined through the data analysis stage.

Findings and discussion

The data-informed codes for educator beliefs aligned with attitudes towards digital technologies while teaching and learning online and when implementing online global collaboration, including school culture, educator ability, and willingness to affect change. Diversity of interviewees' locations, roles and experiences is shown in Table 1.

Table 1. Profile of Interviewees for Phase 2: Semi-Structured Interviews (n=8)

Pseudonym	**Age**	**School Type**	**Location**	**Grade levels / Subject area / Specialisation**	**Length of time teaching**	**Evidence of participating in or planning to participate in a global project of Level 2, 3, 4, 5 as per the Taxonomy for Global Connection**
Stella	60+	Government	Rural, Australia	K-12 influence, mainly taught 7-12 ICT specialist	30+ years	China Connects http://www.connectchinacollaborative.com/
Janice	40-49	International	Thailand (USA)	Primary levels Currently Gr 3	16-20 years	The Global Read Aloud http://theglobalreadaloud.com/
Donna	40-49	Government	Urban, USA	High school - social studies & English	16-20 years	Flat Connections Global Project http://flatconnectionsglobalproject.net
Jill	60+	Government	Urban, Australia	Primary levels, ICT specialist	30+ years	Persuasive Writing No URL
Susan	50-59	International	Ecuador (USA)	5th grade	26-30 years	Global Read Aloud - http://www.globalreadaloud.com/
Meredith	20-29	Government	Canada	Grade 1 teacher	6-10 years	Kids Who Code project

						Flat Matt project - http://adventuresofmatthewandjim.blogspot.ie/ Global Read Aloud - http://www.globalreadaloud.com/
Angela	50-59	Independent	New Zealand	Technology facilitator K-8 ICT specialist	30+ years	Flat Connections 'A Week in the Life' http://aweekinthelife17-1.wikispaces.com/
Claire	40-49	Independent	USA	Librarian Library Tech specialist	6-10 years	http://www.flatconnections.com/ http://ourglobalfriendships.wikispaces.com/

Note. Location in brackets refers to home country. Also, URLs in RH column may not be active now.

Findings indicated that participants believed the purpose of online global collaboration was more than just using online technologies, and more than learning how to collaborate online and even goes beyond simple intercultural interaction. Implementing online global collaborative learning develops new knowledge building capabilities, networking and communication abilities and expanded attitudes. New enabling pedagogical approaches are emerging that are connected, participatory and open with participants revealing a move into autonomous and agile teaching and learning approaches.

With the conviction to connect and collaborate beyond the school, participants adopted a set of inherent beliefs, including the efficacy of digital and online technologies to enhance learning and the educational value of openness. They also believed that online collaboration could lead to, or is a part of, co-creation with virtual partners; and that deeper learning is facilitated by new pedagogical approaches. Such beliefs align with the paradigm shift from educators as classroom experts to "life coaches", creating opportunities, exploring possibilities, identifying and accessing resources within and beyond the school (Zhao, 2018, p. 301). They implemented online global collaborative learning despite a school culture that was not fully supportive or understanding of what they do and how they do it. Angela (pseudonyms used) shared a higher motivation,

> We are growing the next generation of peacemakers, and if we can get them talking with each other, sharing, and learning about each other, maybe we won't have some of the big hassles that we've got going on at the moment.

Participant beliefs related to online global collaborative learning that conceptually informed the Model are shown in Figure 1, which focuses on changes to school culture and online learning. Although online learning is a key part of school cultural change, it also warranted a separate heading to fully reveal the data collected and deeper analysis.

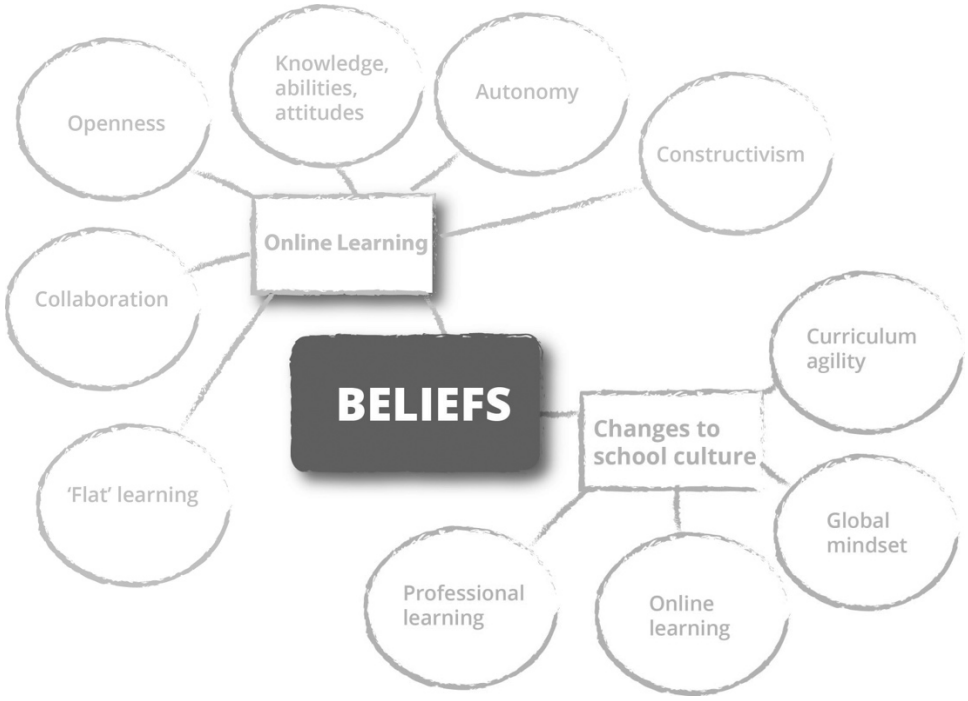

Figure 1: Snapshot of beliefs related to online global collaborative learning

When approaching online global collaboration, participants learned from each other to not merely transfer knowledge but facilitate knowledge construction through personal, flexible, proactive, versatile, and confident use of social media and Web 2.0 technologies. According to Donna, online global collaboration builds confidence as an educator and an online learner and encourages out-of-the-box thinking; Stella believed the learning for students is immediate and deeper than from a textbook; Janice discussed how learning takes different modes and supports multi-literacies; Meredith acclaimed support for digitally-infused inquiry-based learning; Angela acknowledged it provides the courage to experiment and not be afraid of failing; and Claire talked about flattening the world through connection with primary sources to enhance understanding of

others and situations. These beliefs align with the move towards an online collaborative learning mode where pedagogical approaches for global collaborations are not always singular casual encounters but as in global project examples, designed, planned and implemented as part of the curriculum to include online and blended modes.

New mindsets emerge

Participants revealed a certain positive disposition towards trying new things in the classroom. While some referenced it specifically, they all indirectly inferred the term 'mindset'. Responses related to personal beliefs about their capabilities, personalities and subsequent practices centred around having a 'mindset' conducive to online global collaboration. This juxtaposed with references to those of their colleagues who 'did not have the mindset' to apply online global collaboration. For example, Angela referred to the "I can do anything" mindset as a major enabler. At the same time, Stella articulated characteristics of global educators as having "Mindsets, confidence in using technology, confidence in being able to communicate with people who maybe don't speak English as their first language".

The paradigm change needed in education to a technology-enhanced, learner-centred classroom requires stakeholders to evolve their mindsets about education (An & Reigeluth, 2011, p. 61). Ertmer and Ottenbreit-Leftwich (2010) described a belief in the value or efficacy of integrating technology resources to shift practice and do something different. In line with this, a major belief supported by the data is the understanding that educators are no longer the experts in learning or the gatekeepers of information and knowledge. Online global collaborative learning requires a willingness on the part of the educator to let go of control, to 'flatten' the learning environment so that there is less hierarchy of authority and more learner self-determination to embrace collaborative inquiry. As Stella pointed out, everyone learns together when collaborating globally (students, teachers and virtual partners). According to the participants, this shift, brought about by access to ubiquitous digital technologies and global networks, means they developed risk-taking attitudes when integrating technology.

According to Janice, adopting a mindset for online global collaboration means an educator would have the attributes of patience, open-mindedness, flexibility, and confidence in their ability to learn new technologies in a positive and motivated way. Meredith believed a global collaborative educator needs to shift beliefs from mastering and recalling content to valuing a global mindset,

> I think we just need to understand the value in teaching students to live with a more global mindset because it's very realistic for us in our current world, … for me global collaboration is a way to really meaningfully address curriculum outcomes and build important skills, and I think one of the big shifts is that schools need to understand that it's not an add on or a take-away or anything like that, it's a part of how we learn and recognising that many or most adults learn in a global context and that's important for children too.

The participants in this study had a positive disposition towards trying new things in the classroom. This mindset enabled a unique skillset where educators confidently and capably used digital technologies to support online global activities. Strong beliefs emerged about the positive value of connected learning and sharing via online spaces and online learning and global collaborative learning. Participants had personally experienced the advantages and positive impact on themselves as well as their students and 'believed' whole-heartedly in the value of learning online globally with others. Findings reveal a set of attributes, or four key constructs, common to the online global collaborative educators. They include Connection, Openness, Autonomy and Innovation. These are discussed here with support from literature and research data.

Connection

The attribute of 'connection' implies digital fluency and ability in online and blended learning environments to establish a professional presence beyond the school's or organisation's immediate confines. As connected educators' participants showed curiosity, empathy with different cultures and forged relationships with others to develop authentic audiences and partners for collaboration. They fostered this mindset in their students and adopted a classroom-based pedagogical approach whereby learning that is not connected to the outside world feels stifled and disconnected.

Connectivity enabled the educator to develop a network of like-minded colleagues supporting virtual working relationships and partners for collaboration through confident application of both synchronous and asynchronous communication modes. This reinforced the work of McLoughlin & Lee (2010) and Siemens (2005) while extending this to learning in a cross-institutional context. Garrison (2016) recognised the importance and possibilities of online connection; Downes (2014) advocated networks and nodes to create connections; and Blaschke (2012) purported the role technology plays in supporting multi-modal connections for learning. Sometimes connections were organised already when cohorts of classrooms were created for global collaboration through established project designs such as The Global Read Aloud or iEARN Learning Circles. However, connection as an attribute of the online global collaborative educator is more pervasive; it leverages online and digital technologies and draws deeply from educator beliefs and readiness.

An astute online educator such as Stella (in Australia) understood time zones and leveraged synchronous online modes, such as Skype, for connections with close countries in Asia where students in both schools were often in class simultaneously. She also employed asynchronous modes with more distant countries, such as blogging or commenting via Padlet, where students can leave messages and responses for others to collect in their time zone.

Related to connection, interviewees developed personal strategies for effective communication: knowing how to respond to global partners in a timely manner; awareness of time zone implications; use of digital technologies to afford communication modes; and developing strategies for intercultural understanding. However, as global collaboration leaders participants were often adversely impacted by the lesser skills of potential global partners and colleagues. The immaturity with asynchronous learning modes found in global partners often resulted in reliance on synchronous communication. Susan shared the inability of some colleagues to appreciate or embrace virtual communication, “Sometimes people see it as like how could you actually have any kind of connection or relationship with anyone you have never met?”

Adopting outlier practices these teachers supported global connection objectives and cut through pedagogical isolation and detached themselves from the main system to provide alternative opportunities for learners, thereby adopting new pedagogies to do so. However, some participants acknowledged they then found it more difficult to build meaningful connections and collaborations within their school. For example, Meredith focused inwardly on her class and outwardly on the external partnerships she created, disregarding her immediate colleagues because of their preference for content and knowledge mastery and their lack of interest in global connections. It is interesting here to contemplate whether the isolation within a school is the catalyst for global collaborators to connect beyond or whether those with outlier tendencies connect beyond, become focused on external connections and more dismissive of internal colleagues, thereby enforcing self-isolation within the school.

Openness

The attribute of openness applies to an educator who is 'open': broad-minded, understanding, receptive to other ways of knowing as well as willing and able to adopt practices that embed sharing of ideas, resources and collaborative learning. As open educators' participants leveraged digital technologies such as social media or blogging to share openly and fluently online while adopting a stance where learning can happen anywhere, anytime, with and from others. An open approach implies a flattened learning environment, less hierarchy in the learning process, and a shift in pedagogy supporting a key purpose of teaching and learning: the collaborative process, including co-creation, leading to knowledge building. Participants were willing to use multimedia in conjunction with social media to openly share, contribute, create, and find global partners. However, the findings from this study suggested the practice of open publication (Cronin, 2017) and networked participatory scholarship (Veletsianos & Kimmons, 2012) is inconsistent among K-12 educators.

The dimensions of global competence (knowledge, values, attitude, skills) identified in the OECD PISA global competence framework (Piacentini et al., 2018) are an influencing factor here.

Aligning with the attribute of openness, Cronin (2017) developed characteristics of the open education practitioner to include social learning. Vangrieken et al.(2015) discussed an openness to collaborate, while Stommel and Morris (2018) stressed the importance of openness in critical digital pedagogy leading to a re-imagination of cross-border communication and collaboration. The participants' shared beliefs signal the era of open classroom doors, both physically and virtually, where access to appropriate tools affords more collaborative learning. A belief in openness led to developing open resources, often in collaboration with others. Open communication and openly sharing individual and co-created products are aspirations not always realised but believed by the participants to be vital parts of the open classroom when collaborating globally.

As an extension to simply 'collaborating', participants inherently believed in a greater purpose to online collaboration than just playing with digital tools and finding virtual classrooms to say 'hello'. They understood that true collaboration went beyond the ability to connect and affect simple communications and indicated a desire to shift openly into co-creation with virtual partners. Co-creation refers to a globally developed product or outcome brought about by sharing ideas and cultural identities (Garrison & Cleveland-Innes, 2005; Harasim, 2017). Working and creating at a professional level with online technologies ensured learning was authentic, real-world and open. Claire shared how she prefers to see something created and shared openly from the collaboration, "I think the collaboration has to be about the creation of something new that you're doing together". The prevalence of digital tools (first-order barriers identified by Ertmer, 1999) supported online global collaboration goals. However, participants confirmed that their focus was on open platforms and Web 2.0 tools, such as blogs, wikis, and platforms like Padlet that provided a neutral place for dispersed classrooms to come together online for learning.

The interviewees collectively regarded being open, using age-appropriate tools, as an important approach when learning online. Leaving an open digital learning legacy allowed students to see the work of others and raised the bar of learning with Stella claiming, "Kids are the best textbook for each other".

Autonomy

The attribute of 'autonomy' enabled educators independent decision-making in their classrooms concerning curriculum, access to and use of digital and online technologies, and adoption of alternative pedagogical approaches. Autonomy applies here to how participants were given or seized the independence to orchestrate online global learning, removing barriers preventing them from doing so. It also allowed them to utilise personal values, preferences and beliefs to plan connections and implement collaborations with others at a distance. As autonomous educators, they sought and preferred working within the school system to overcome barriers and became frustrated when this eluded them, hence a tendency for outlier behaviours. More broadly, autonomy enabled acknowledgement as resilient leaders and risk-takers who cope well with change through adopting a flexible and agile approach with curriculum, classroom dynamics and global partnerships. Through promoting self-determination in students, global collaborative educators were willing to relinquish control, accommodate different learning needs, and realise online global collaboration is not just one more thing to do: it is integral to modern teaching and learning.

Blaschke (2012) referred to autonomy as the realisation of self-determination through a heutagogical approach. Although lacking a singular pathway to success, there is evidence of commonalities and the participants effectively became self-determined learners within an online, networked ecology (Hase, 2016). Vangrieken et al. (2017) proposed that educator autonomy revolves around educator collaboration, freedom to make professional choices and the ability to participate in collaborative decision-making. Janice, for example, shared how online collaboration amplified motivation and purpose and increased academic rigour. She expected to make this happen in her classroom through modelling strong communication skills and building capacity for empathetic learning. Meredith worked consistently on raising student awareness of online learning and the permanence of putting things online, stating, "Beyond just the motivation and empowerment of sharing their learning is the opportunity to teach digital citizenship".

The participants revealed that school policies typically block, contain, or are suspicious of Web 2.0 tools fearing loss of 'control' over the learning environment or decreased and inadequate privacy and security controls. Regardless, participants learned how to advocate and usually found access to the tools they needed within the school context. Both Donna and Stella felt comfortably supported by their schools. In contrast, for Meredith, updates in school and district policies and 'loosening' of bureaucratic requirements, including unblocked teacher accounts, provided additional autonomy. Janice struggled the most with a lack of autonomy in the classroom and having to seek permission, sometimes resulting in conflict with gatekeeper administrators. This lack of autonomy and choice is juxtaposed with Janice's intrapersonal ability to form online relationships with external teachers and classes through open online practices. Pedagogical autonomy, in this context, is the ability to not only choose and use relevant digital technologies but to establish a connected and collaborative approach to learning. The autonomy is lost or compromised when there is a conflict between what the school may want, such as focus on content delivery or team-based grade-level curriculum as with Janice, and what the educator may prefer to do, such as a focus on the learning process and inclusion of global collaboration.

This research clarifies the need for educator autonomy in the classroom, defined as curriculum and pedagogical independence in conjunction with digital freedom. Those new pedagogical approaches are emerging where educator autonomy is important, if not crucial, to forging global connections and collaborations.

Innovation

The attribute of 'innovation' was implied by the interviewees who initiated, collaborated, and created new designs for enhanced learning outcomes. There was a shared expectation that educators' personal growth mindset, in conjunction with original pathways for teaching and learning, include online collaboration as the new normal. As innovative educators, they cultivated global citizenship amongst students and peers, focusing on curriculum development for global collaborations that included online social learning. Enthusiasm for intercultural connections and

collaborations fostered tolerance amongst diverse learners and accessible ongoing design applications to implement, evaluate and modify global learning experiences, to focus on processes, not just outcomes. Vangrieken et al. (2015) found schools became more innovative when educators collaborated, while Arteaga (2012) referred to an innovative pedagogy developed by outlier educators using social media and collaborative, global, open networking.

Some participants shared how a typical approach taken by administration (Head of School, IT Director and the like) oscillated between various fear factors about digital technology use mingled with a desire to support innovative practices. The perceived need for online security, privacy, and what one participant called a 'walled garden' learning environment within a school was usually the priority, often based on decisions made above the school level (e.g., district or state policies or country-specific barriers to online access). However, these decisions were usually to the detriment of forming partnerships beyond the school and reflected a lack of understanding about the benefits of online global collaborative learning.

Perhaps above all, participants discussed the 'permission' given by school administration to the educator to think outside the box. The term 'permission' is used loosely here where some participants did not need or did not bother to seek permission, knowing they could try new ideas and continue to meet curriculum objectives and standards expected by the school independently. Enlightened support encouraged risk-taking and acknowledged that failure through innovation might happen as part of the learning process. Donna's school administration was particularly supportive, enabling her the opportunity to experiment and 'fail forward', meaning she will likely make mistakes as part of the learning process but will do so in a supportive environment.

Herein lies much of the conflict in the context of online global collaborative learning: the interviewees see their role as being autonomous (within certain sensible constraints), able to explore, implement, and create new opportunities for learning, whereas the school considers the educator role as firstly complying with all school requirements, and then, if time and energy permits, applying innovative options. The participants, as leaders, want to be and are innovative;

the schools seemed to want innovation, although within parameters. This is not to say they were breaking any rules. Still, they did push boundaries and isolated themselves, in some cases, from mainstream teaching and learning and from colleagues through their innovative practices. Empowered and fearless, they implemented new innovative learning designs, including online and blended modes, linked with required curriculum objectives. Coupled with this, they encouraged and scaffolded students to personalise their use of online technologies to collaborate within and beyond the school. This attribute declares innovation in teaching and the classroom as the new normal, the new paradigm, both expected and acknowledged.

Developing a conceptual model for the global collaborator mindset

Conceptual frameworks and models contribute significantly to research and associated disciplines through their ability to operationalise key concepts and processes into diagrammatic representations (Adom et al., 2016). In recent years, a theoretical framework about the relationship between technology and teaching that potentially transformed the conceptualisation of educator practice and knowledge is the Technological, Pedagogical, Content, Knowledge (TPACK) model (Mishra & Koehler, 2006). In the global education space, the Continuum of Global Education (CGE) (Cook et al., 2016) is presented to enhance technology literacy and understanding of global collaboration, and for educators engaging in global activities, has parallels with the Taxonomy of Global Connection (Lindsay et al., 2012). At the higher education level, Redmond et al's. (2018) online engagement framework identifies five key elements: social, cognitive, behavioural, collaborative, and emotional. The Online Collaborative Learning framework by Redmond et al. (2006) is where the online learning environment shifts to encourage learners and educators as co-creators through interaction and collaboration. These models and frameworks inform thinking and practice regarding communication and support online engagement in K-12 and higher education but are deficient in the relationship between educator beliefs and motivations for online collaboration. This creates a space to propose a new model.

The Global Collaborator Mindset model

The Global Collaborator Mindset (GCM) model serves as a conceptually new way of framing commonalities for teaching and learning and reveals pertinent characteristics of educator readiness, capacity for and disposition towards online global collaboration. The proposition here is that educators do not naturally have a GCM, and few educators have had the opportunity to shift or change their mindset since the advent of online digital learning to include online learning and global collaboration. It is also proposed a GCM can be identified, labelled, and then cultivated and learned.

The GCM model challenges the belief that technology integration and access to online networks naturally means educators are global and collaborative and aligns with the belief that educators can continue to build on basic competencies, learn through continued effort and practice, and develop stronger pedagogical approaches to online global collaborative learning. It is only through a personal belief system and personal mindset that the motivation leading to the practice of online global collaboration exists. This relates to Ertmer's (1999) work around intrinsic second-order barriers resulting in resistance to change through less tangible challenges of personal belief systems and extended beliefs into the online global collaborative realm.

The GCM model is an iterative process with the goal of empowering educators to become skilled online global collaborators, enabling participation in online global collaborative activities and potentially further influencing pedagogical approaches. Shaped further by global collaborative experiences and practices, the global mindset itself becomes part of the educator's pedagogical self and enables transformation as an online global collaborator. The GCM model includes four key attributes from the research findings: connection, openness, autonomy and innovation (Figure 2), and represents willingness, on the part of the educator, to take on challenging experiences, become a change maker, and connect learning beyond the physical classroom. For example, developing a networked perspective on learning is a powerful shift in mindset for an educator. To then apply that

to online global collaboration requires the mindset of a global collaborator, a GCM, and application of the GCM model.

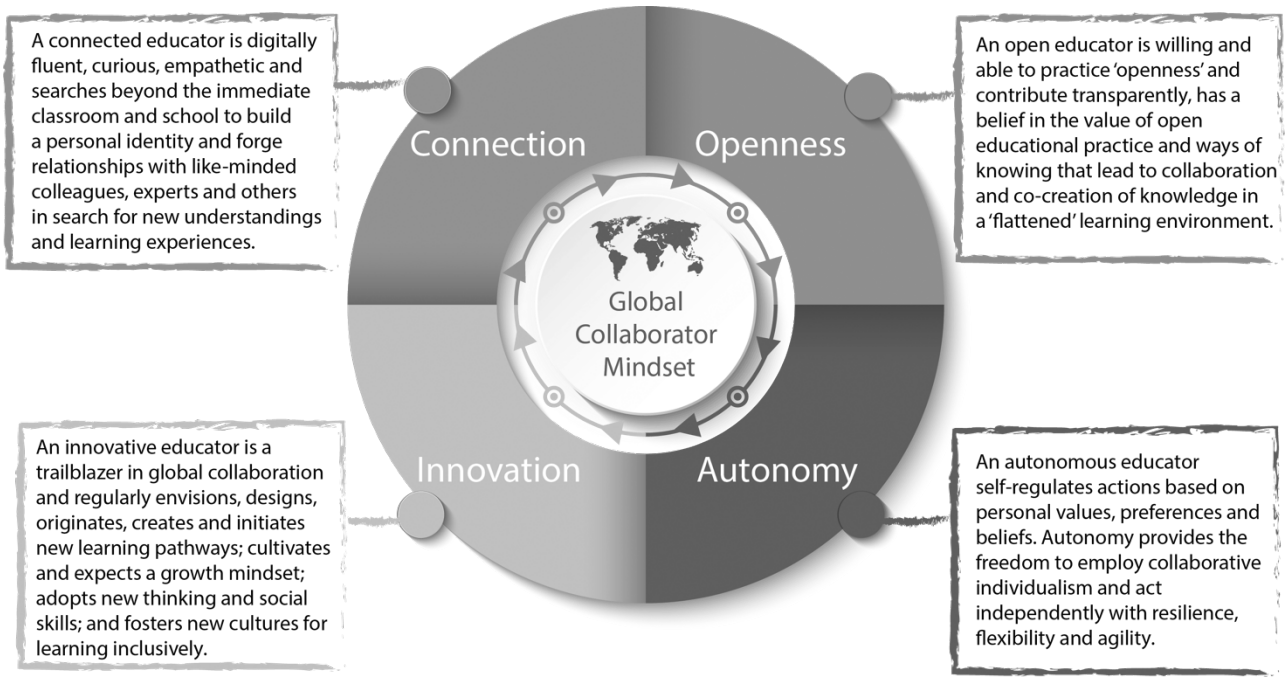

Figure 2: Attributes of the Global Collaborator Mindset model

Implications, limitations, and future research

Similar to other research, is about the phenomenon of online global collaboration in all its guises, including as a curriculum objective (such as global projects) (Oran, 2011; Riel, 1994) , as a pedagogical approach (Lindsay, 2016; Lock, 2015; Sadler & Dooly, 2018), as an online learning objective to support digital fluency (Cook et al., 2016; Owens & Hite, 2020; Snyder, 2016), and as a means of developing global competency (Klein, 2017).. The strength of conclusions in this study relies on the fact that the final eight interviews are with geographically dispersed educators from a range of K-12 teaching situations and levels and in the criteria for interviewees to have experience in online global collaboration through participation in longer-term projects. Distinct from other research, the focus is on educator readiness for embedded online global collaborative learning and associated pedagogies.

Outcomes of this research particularly impact the K-12 learning environment, educator competency and capability, leadership paradigms, professional learning, and teacher education. The transformative practise of online global collaborative educators revealed a disposition leading to the Global Collaborator Mindset (GCM) conceptual model. Four implications underpinning the development of a GCM and implementation of the model by educators are presented here. Firstly, given the diversity of education systems between countries, adoption of the GCM model should be a whole-school (whole course/degree) embedded professional learning objective within the institution requiring personalisation and adaptation to the needs of educators and learners (not applied 'off-the-shelf') and approached through affirmative action in support of curriculum-based collaborations.

The second implication is that the GCM model's development is best done with a focus on educators as creators of knowledge in the global classroom. Activities such as doing and creating, sharing and collaborating are intrinsic motivators informed by, not isolated from, the GCM. Thirdly, in conjunction with GCM growth, educators must have curriculum and pedagogical independence to embed online global collaboration. The goal here is to develop and apply skills, attitudes and behaviours to accommodate connected learning, open learning, autonomy and digital freedom, as well as innovation for global and collaborative learning. The fourth implication is to embed the GCM into teacher education whereby pre-service course offerings include the GCM model as part of the pedagogical toolkit contributing to far-reaching paradigm shifts in education.

There is a need for research-based implementation of online, collaborative and global collaborative learning, potentially impacting policy change around curriculum and ICT access and use. The GCM model has potential as a future research agenda. Questions remain around the motivation of educators and how they might develop a GCM, and how approaches to and outcomes from doing this may translate into changed pedagogical practices. Research could examine the GCM within diverse school contexts, especially as a longitudinal study around shifting educational paradigms. Potential research also applies to higher education, using the findings from this research

as a springboard into new awareness and practices for teaching and learning at this level. Teacher education is a key area for future research regarding developing a GCM in pre-service educators and then what impact this may have in the classroom through global collaborative activities.

Conclusion

This case study research design included theoretical propositions related to constructive, connected and collaborative learning and the phenomenon of online global collaboration by educators in K-12 learning environments. It informs two factors, ability and willingness, influenced the adoption of new global learning modes whereby an online global collaborative educator adopts a willing attitude conducive to implementing things differently. Enabling and motivating educators to transform learning through implementing new online, global and collaborative modes is the adoption of a 'can do' mindset informing a set of beliefs about learning and teaching.

Previously intangible, this research suggests educators who implement online global collaborative learning in K-12 classrooms are in some way 'changed' in their approach to teaching and learning enabled by the adoption of a set of dispositions, behaviours, and skills: the Global Collaborator Mindset (GCM). Early GCM adopters identified opportunities and had greater sophistication in analysing local and global contexts leading to collaborative possibilities.

The incidence of 'older' participants in this research indicates this ability to adopt new attitudes is not ageist and is more likely to develop through experience and opportunity for growth as a practising professional. Attitude and flexibility were noted as vital impacts on practice, evidenced by Claire describing the approach as being able to "build the plane as you are flying it". Participants also revealed agile virtual communication habits with global partners led to collaborative learning and shared purpose between educators resulting in 'faster' learning and an empowering experience.

The GCM model, through the four attributes of connection, openness, autonomy, and innovation, fosters competent online global collaborative educators whose pedagogical approaches have been influenced through connecting the learning within and beyond the classroom and school.

This leads to open educational practice with a focus on digital sharing, and implementing virtual collaboration leading to co-creation. The educator role has shifted to being a facilitator of global connections, inspiration for global collaborations and model for self-determined learning for students and other educators. Furthermore, learning has become more fluid and designed around the ever-present possibility of learning from and with others at a distance at any time.

Statement on Ethical Guidelines

After scrutinising the ethics application form, participant information sheet, consent form, and supporting documentation (surveys and interview questions), the project was given ethical approval (H15REA156). Survey data was gathered through an anonymous survey, interview participants were provided the opportunity to member check their transcripts, and pseudonyms were used in all publications to protect the identity of the interview participants.

Statement on potential conflicts of interest

The authors have no conflict of interest to declare.

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