

Chapter 12

An Action Research Study on Globally Competent Teaching in Online Spaces

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ABSTRACT

Research shows that teachers understand why global competence is important but do not necessarily know how to implement global teaching. One way to address this problem of practice is integrating global competence with teacher education. Education abroad is an effective method to internationalize teaching, but travel is suspended due to the global pandemic. At the same time, the pandemic also highlights how global cooperation and global competence are vital in mitigating the effects of the virus. The purpose of this action research study was to investigate the impact of infusing global learning in an online education methods course. Data sources included products of learning and reflections from 24 master's students. Findings include five themes (multilingual communication, current event awareness, content-aligned integration, utilizing students' identities, and practicing local-global inquiry) that describe the prerequisites, barriers, challenges, and successes as teachers develop global competence and implement globally competent teaching in their K-12 classrooms.

Globalization 3.0 makes it possible for so many more people to plug in and play,

DOI: 10.4018/978-1-7998-6922-1.ch012

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and you are going to see every color of the human rainbow take part.

-Thomas Friedman in The World is Flat

INTRODUCTION

Our world is increasingly digital and global. Technology makes connections across the globe faster and easier than ever before. Digital and global competence is thus important for success in the modern world. Digital competence refers to the ability to *leverage technology* to participate, communicate, and work, while global competence, similarly, refers to the ability to participate, communicate, and work *worldwide* (Kerkhoff, 2017; Kerkhoff, 2020).

A 2018 Sodexo Global Workplace Trends report points to cross-cultural competence, virtual collaboration, and new media literacy as key skills for the 2020 workforce. Similarly, according to an American Association of Colleges and Universities' (2018) sanctioned report on the importance of college learning outcomes in the business world, 65% of business executives and 73% of hiring managers believe that the ability to “analyze/solve problems w/people from different backgrounds/cultures” is of high importance and 60% and 73% respectively believe “stay current on changing technology/applications to workplace” is of high importance (p. 13). Business leaders perceived gaps in terms of graduate preparedness with both of these outcomes, and both held or increased in importance since the 2014 report. To help prepare students for 21st-century careers and community life, teachers themselves need to know how to collaborate with people from different cultures and stay current on technology applications.

Various communication and telecollaboration tools enable interaction and professional collaboration (Lips et al., 2017; Starkey, 2020), and allow teachers the opportunity to create engaging lessons with global and diverse perspectives (Broere & Kerkhoff, 2020; Goodwin, 2020; Kaempfer, 2018). Educators need to be able to use technology tools and resources to maximize and support 21st- century learning (ISTE, 2017).

In addition to digital competence, global competence is important. This combination of digital and global competence is mentioned by Yemini et al. (2019) as their review of the literature on global education identified a gap in research at the intersection of the digital and the global. The researchers state a need for “scholarship to take a greater interest in ICTs [Information and Communication Technologies], as well as in the infusion of GCE [Global Citizenship Education] into pre-existing approaches” (p. 87). Reimers (2009) defines global competence as:

The knowledge and skills people need to understand today’s flat world and to integrate across disciplines so that they can comprehend global events and create possibilities to address them. Global competencies are also the attitudinal and ethical dispositions that make it possible to interact peacefully, respectfully, and productively with fellow human beings from diverse geographies. (para 4)

The authors appreciate how Reimers’ (2009) definition broadens the discussion beyond career-readiness to include ethical and peaceful living. The extant research shows that teachers understand why global competence is important for their students’ future careers and community lives, but that they do not necessarily know how to implement global teaching in their classrooms (Kerkhoff, et al., 2019; Kerkhoff & Cloud, 2020; Rapoport, 2010). One way to address this problem of practice is through integrating globally

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competent teaching with formal teacher education in universities. According to the Longview Foundation (2008), colleges of education are among the least internationalized on campus. Education abroad is touted as an effective method to reflect on practice (Alfaro & Quezada, 2010; Kissock & Richardson, 2010); develop personally and professionally (Pence & Macgillivray, 2008; Zhao et al., 2009); and enhance knowledge of and appreciation for cultural diversity (Doppen, 2010; Kinginger, 2009). However, traveling abroad is a large investment of time and money. In addition, there is not a body of evidence yet that teaching abroad is associated with increases in one's global competence (Byker, 2016) nor one's future students' global competence. Although there have been qualitative and longitudinal studies that are beginning to show a relationship, in fact, Kerkhoff and colleagues' (2019) survey research found that travel was not correlated to global competence nor teaching for global competence. After teaching abroad, participants reported introducing authentic cultural experiences for their students (Biraimah & Jotia, 2012; Cook, 2009), including students' cultures in the curriculum (Slapac & Kim, 2020; Slapac, 2021; Zhao et al., 2009), and "decentering" the US from the curriculum (Patterson, 2013, p. 107).

Globally competent teaching from home is especially important during the current pandemic when global travel is prohibited, and yet global cooperation and global competence is vital in mitigating the effects of the virus. The purpose of this action research study was to investigate the impact of a masters-level online education methods course infused with global learning. The study aimed to determine what participants perceived as the prerequisites, barriers and successes when developing and enacting globally competent teaching.

REVIEW OF RELEVANT LITERATURE

Teacher education programs are responsible for preparing pre-service and in-service teachers to teach their students to interact and function in a globalized, digitized world (Longview Foundation, 2008; Asia Society & OECD, 2018; Yemini et al., 2019). In the United States, where this study is situated, education organizations (i.e., United States Department of Education Office of Educational Technology, International Society of Technology in Education, Society for Information Technology and Teacher Education, Council for the Accreditation of Educator Preparation, National Technology Leadership Coalition, and American Association of Colleges of Teacher Education) developed the Teacher Educator Technology Competencies (Foulger et al., 2017). The eighth competence listed for teacher educators is to use technology to connect globally with various regions and cultures. Research has shown that technology can be a successful medium to foster global competence among teachers and their students (Carr, 2016).

Online Global Learning with Teachers

Online collaboration has played an important role in fostering global competence among teacher candidates. Zong (2009) found that by participating in a multinational online collaboration project, preservice teachers gained an understanding of global education and a deeper level of global awareness through the project. Russian (Dugartsyrenova & Sardegna, 2019) and South Korean (Kim et al., 2018) teacher candidates collaborated with teacher candidates in the United States (U.S.) resulting in an increase in intercultural awareness and transformative learning in both studies. Kopish et al., (2019) researched the integration of cross-cultural experiences in their local community in their teacher education courses

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designed to develop the global competencies of teacher candidates. They found that establishing human connections was core to participants' development of global competence.

Carr (2016) researched an online platform, eTutor, through which pre-service teachers and grades kindergarten through 12 students across four countries interacted. The objective was to enhance the PSTs' intercultural and educational technology capabilities. The eTutor project successfully shows how an online platform can provide opportunities for teacher candidates to engage in authentic cross-cultural experiences and foster the competencies needed to teach in a digital and global world.

Online Global Learning with Students

Kerkhoff's (2017) mixed methods study found three K-12 instructional practices that used technology to develop students' global readiness: students utilize technology for virtual interviews (with experts, community members, etc.); students utilize synchronous technology (e.g., Skype, Google Hangouts) for international collaborations; and students utilize asynchronous technology (e.g., email, blogs) for international collaborations.

Spires and colleagues (2019) explained that the global aspect of the curriculum helped students learn to consider different perspectives. Students utilized technology to research a global issue from international sources and to interview an expert to learn more about the issue.

Sánchez and Ensor's (2020) qualitative study of U.S. elementary media center classes examines communicating online with children in a refugee facility in Europe. Through their viewing of each other's experiences, students in the U.S. engaged in deep and active listening to the experience of diverse others and "restor(y)ing social futures" by committing to action to help one another (p. 272). Even through space and distance, the digital stories and videos prompted U.S. students to respond with empathy to make a positive impact.

Kaempf (2018) researched the Global Read Aloud (Ripp, 2021) virtual learning environment and found it impacted the third-grade students' interest in learning more about other countries. Participants in her study had collaborated over shared reading with classes in Egypt, India, and Canada. Carpenter and Justice (2017a; 2017b) researched potential technology-enhanced global collaboration using the Global Read Aloud project. Educators (primarily from North America) utilized social media to interact with other classes using synchronous and asynchronous technologies. This study revealed some teachers need preparation and support to participate in activities related to the Global Read Aloud (GRA), which is a complicated process requiring Technological Pedagogical Content Knowledge (TPACK) (Mishra & Koehler, 2006) as well as "cross-cultural interaction, networking, collaboration, global citizenship and digital citizenship" (Carpenter & Justice, 2017a, p. 298). Carpenter et al. (2018) conclude that technology provides a potential space for building students' global readiness. Teachers are required to learn how ICT relates to content and pedagogy (Mishra & Koehler, 2006; Koehler & Mishra, 2009). Technology skills can help teachers to weave in global citizenship education throughout all subject areas (Tichnor-Wagner et al., 2016). Therefore, teacher educators are challenged with designing authentic learning experiences for teacher candidates that foster their global and digital competencies.

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CONCEPTUAL FRAMEWORK

Our conceptual framework joins TPACK (Mishra & Koehler, 2006; Koehler & Mishra, 2009), globally competent learning (Tichnor-Wagner, et al., 2016; Tichnor-Wagner et al., 2019), and teaching for global readiness (Kerkhoff, 2017; 2018).

TPACK

TPACK by Mishra and Koehler (2006) builds on Shulman (1986)'s pedagogical content knowledge which describes effective teachers as having: a) content knowledge, i.e., deep knowledge about the subject they teach, b) pedagogical knowledge, i.e., a thorough understanding of how students learn, and c) pedagogical content knowledge, i.e., an expert knowledge-base for pedagogy specific to their content area. In response to the digital turn in education, Mishra and Koehler used a five-year design experiment methodology to add technological skills and knowledge to Shulman's theory. In the same vein as Shulman, assert that in addition to knowledge about technology, teachers need to learn how technology relates to their particular content area and can enhance their pedagogy (Mishra & Koehler, 2006; Koehler & Mishra, 2009). Experts in education technology research, Albion and Redmond (2008) agree, stating that effective teachers "infuse ICTs using authentic and pedagogically appropriate approaches" (p. 1). See Figure 1 for an illustration of TPACK.

The TPACK model is foundational in education and has been cited over 10,000 times. However, the TPACK model also has been critiqued for being highly theoretical, not being student-centered, and being hard to enact practically (Mirra, 2019). In addition, while the TPACK model acknowledges that learning does not happen in a vacuum but is situated within a context, the model tends to equate context with limitations and does not expound on how context can be related to teaching as an asset. This leads to the next concept where context is explicitly linked to teaching and learning.

Global Competence and Readiness

Globally competent learning and global readiness are related concepts that were developed around the same time by different researchers. Globally competent learning is based on qualitative analysis of interviews with expert global teachers (Parkhouse et al., 2015; Tichnor-Wagner et al., 2016, 2019) and defines global competence as "the knowledge, skills and dispositions needed to thrive in a diverse, interconnected world" (Tichnor-Wagner & et al., 2019, p. 2). Global competence includes cultural knowledge, intercultural skills, and a positive attitude towards multiple perspectives and global interconnectedness. Globally competent teachers "recognize their own perspective, culture, language, and context before extending outward to recognize the perspectives, cultures, languages, and contexts of others. This embraces a 'glocal' mindset that recognizes the intersecting cultural, regional, national, and global identities and affiliations" (Tichnor-Wagner et al., 2019, p. 13). Teachers use a glocal mindset to integrate global learning with the standard course of study. In this way, globally competent teaching is situated in the local context, connected to global systems, and integrated with the curriculum (Slapac, 2021).

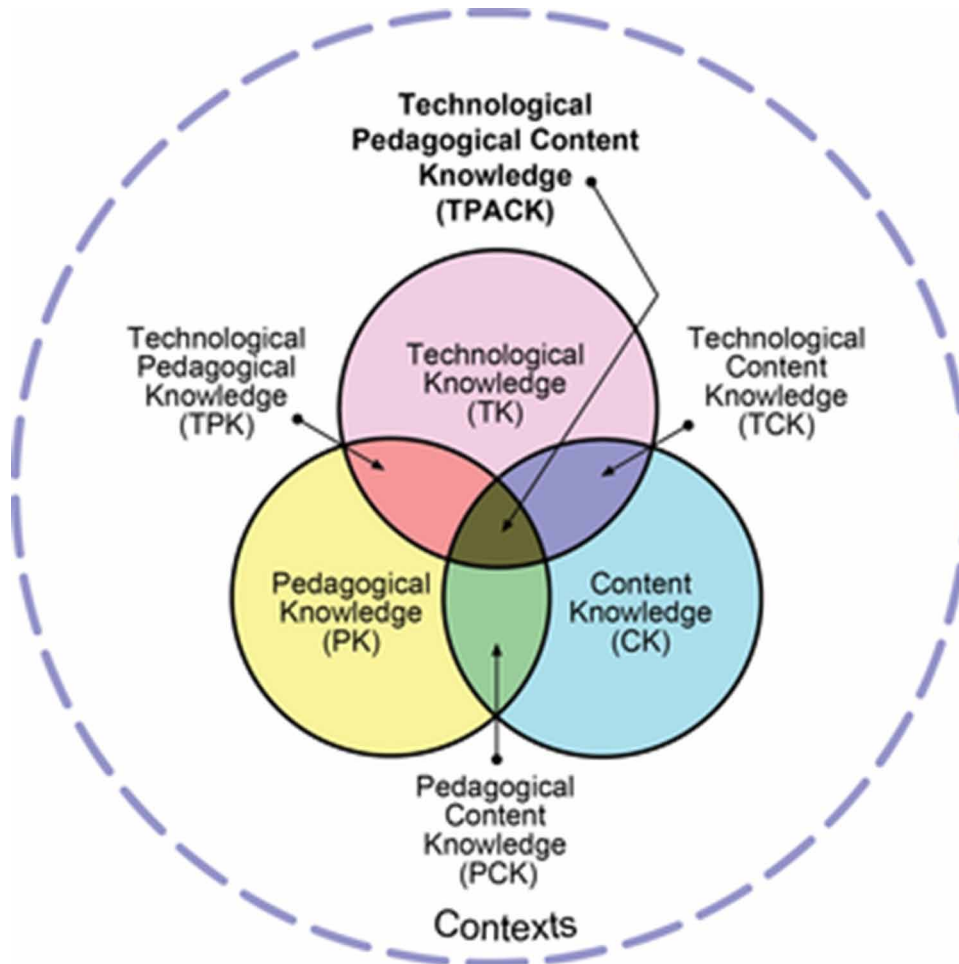
Likewise, the first two dimensions of teaching for global readiness are situated relevant learning and integrated global learning, as demonstrated in the first row of Figure 2. Critical and intercultural are the last two dimensions. Teaching for global readiness was operationally defined and empirically validated through quantitative analysis (Kerkhoff, 2017; Kerkhoff, et al., 2019; Kerkhoff & Cloud, 2020). Global

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readiness refers to the digital literacy and global citizenship needed in 21st-century private and public life to participate, communicate, and work anywhere with anyone in the world.

Figure 1. Technological Pedagogical Content Knowledge used with permission from Mishra & Koehler (2006)

Source: (Mishra & Koehler, 2006)



METHODS

We utilized action research as our inquiry method (Cochran-Smith & Lytle, 2015). Action research involves a teacher investigating a problem of practice, in our case infusing global competence with teacher learning. The teacher-researcher acts as a participant-observer in the study, systematically and iteratively examining their own practice designing the study and the learning; observing and collecting data; analyzing data and reflecting; and generating findings to improve their own practice with hope of transferability to other teachers as well (Kemmis et al., 2014). As such, action research creates a cycle

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between research and practice, “where research impacts practice and practice influences research” (Putman & Rock, 2018, p. 12). The research questions for this study include:

Figure 2. Four dimensions of teaching for global readiness

Source: (Kerkhoff & Cloud, 2020)



- What prerequisites, successes, and barriers do teachers report when developing a global competent teaching practice?
 - What dispositions, knowledge, skills do teachers report as being foundational to globally competent teaching? (prerequisites and successes)
 - What do they perceive as barriers to developing global competence? (barriers)
- What experiences do teachers report when enacting global learning?
 - What challenges do teachers face when enacting globally competent teaching? (prerequisites and barriers)
 - What methods do teachers perceive would be beneficial when teaching students for global competence? (desired or successful practices)

Context and Participants

The context of this study is an education methods course in an online curriculum and instruction master’s degree program at a large urban land-grant university. Participants included 24 teachers with 1-20 years of experience, teaching in grades 1-12, in content areas including English, mathematics, science, social studies, music, and art. Participants identified as 84% White, 8% African-American, 4% Asian-American, and 4% Hispanic or Latinx. Participant demographics can be found in Table 1. The course, called “Learning through Inquiry”, included modules on collaborative learning, culturally relevant teaching, inquiry-based learning, and global teaching. In Figure 3, we outline the global teaching module objectives and content.

An Action Research Study on Globally Competent Teaching in Online Spaces*Table 1. Table of participant demographics*

Identity	Variable	Percentage	Number
Gender	Male	38	9
	Female	62	15
Race and Ethnicity	Asian and Pacific Islander	4	1
	Black and African American	8	2
	Hispanic and Latinx	4	1
	White	84	20
Age	18-24	42	10
	25-34	38	9
	35-44	17	4
	45-54	4	1

Figure 3. Global teaching module objectives and learning activities

Global Teaching Module

Learning Objectives
The learning objectives for this module were adapted from the Global-Ready Teacher Competency Indicators (VIF International, 2014).

- Pedagogy - The teacher demonstrates and models expertise in inquiry- and design-based learning theories and practices that build learners' knowledge, creativity, innovation, critical thinking, perspective-taking and problem-solving skills through consistent implementation of global projects.
- Content - The teacher demonstrates knowledge of global content, curriculum and instructional practices that cultivate new knowledge through ongoing interdisciplinary global investigations.
- Technology - The teacher is confident in experimenting with and consistently integrating next-generation technology throughout teaching and learning processes that build learners' global content knowledge, communication and media literacy skills.

Agenda

1. Watch the Asia Society video [Global Competence](#)
2. Read Veronica Boix Mansilla's article [Global Thinking](#)
3. Discuss the video and reading using the Global Thinking 3Ys Routine
4. Watch minilecture video captured on Voicethread
5. Complete a collaborative [Case Study](#) on global teaching
6. Participate in FlipGrid Discussion on productive collaboration
7. Take the Teaching for Global Readiness self-reflection instrument again. Compare to your answers at the beginning of the semester. Reflect on how you grew. Set goals on what you would like to continue to work on

Data Collection

We collected multiple sources of data to provide convergence of evidence in relation to our findings (Miles et al., 2014). We collected products of learning from the online course that related to global teaching. Primary data sources included assessments that were intentionally added to the course to integrate globally competent teaching throughout the courses as well as assessments of the Global Teaching Module. Secondary data sources were used to contextualize and triangulate analysis of primary sources. See Figure 4 for descriptions of each source.

An Action Research Study on Globally Competent Teaching in Online Spaces*Figure 4. Data sources of online interactions*

<p>Primary data sources:</p> <ul style="list-style-type: none"> • Concentric Circles of Identity Discussion board posts where students listened to the TED Talk “Don’t ask where I’m from, ask where I’m a local” by Taiye Selasi (https://www.youtube.com/watch?v=LYCKzpXEW6E) and described their identity as connected to multiple places, starting with local and moving out to national and global. • Globally Competent Teaching Continuum (Tichnor-Wagner, et al., 2019) pre-assessment and self-reflection on their responses, setting goals for the semester. • Global competence discussion board post and replies following the 3 Whys global thinking routine: Why does global competence matter to you, Why does global competence matter to the people around you (e.g., your students), and Why does global competence matter to the world? • Teaching for Global Readiness collaborative case studies where participants worked in collaborative groups to evaluate a teaching vignette from World of Words or PBI Global. • Globally Competent Teaching Continuum post-assessments and self-reflections on growth over the course of the semester. <p>Secondary data sources:</p> <ul style="list-style-type: none"> • Definitions of teaching at the beginning of the semester and self-reflections on definition of teaching at the end of the semester captured via images and audio on Voicethread. • Asynchronous FlipGrid discussions on productive collaboration with pre-service teachers from another university. • Project-Based Inquiry Global (see Author, 2020) culminating assessments where teachers designed and completed personal inquiry projects around a question they were intellectually curious about and integrated global perspectives as they gathered and synthesized resources. • Anonymous course evaluations after the course was completed.

Data Analysis

We used Google Drive to collaborate on data analysis. We copied and pasted all data into Google Docs organized in a collaborative Google Drive folder. With Google Drive, we could show our views on the same material while dividing the work and cooperating. We could also see each other’s views, evaluate each other, and help and inspire each other. As for the coding methodology part, we applied both descriptive and values coding (Saldaña, 2016).

In the first round of coding, we divided this part of the work into three parts. Focusing on the research questions, we launched the first round of coding for the four main data sources: Pre-Globally Competent Teaching Continuum Reflections, Post-Globally Competent Teaching Continuum Reflections, Discussion Board, and Final Projects. For the first round of data analysis, we highlighted sentences in the text that showed insights into the research questions (Yin, 2018). In this coding process, we chose different colors to relate the data to the different research questions, for example prerequisites were yellow, successful practices were green, and barriers were red. The use of different colors during coding made it easier to recognize for all the collaborators. Below, we use Table 2 to illustrate the first encoding process.

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Table 2. Data extract with codes applied

Data Extract	Coded for
Overall, I do continue to strongly promote equity for both my students and their families in both education and community interactions.	Equity and equality
Develop local, national, or international partnerships that provide real world contexts for global learning opportunities and Develop and use appropriate methods of inquiry to assess students' global competence development.	Inquiry
I feel like my biggest weaknesses are Integrate learning experiences for students that promote content-aligned explorations of the world and Facilitate intercultural and international conversations that promote active listening, critical thinking, and perspective recognition. I teach math so I do feel like these are harder for me to incorporate in my classroom than they would be in a social studies or language arts classroom.	Challenge in math and science

After the first coding, we summed up 48 initial codes. We created a codebook, giving each initial code an operational definition and example from the data. We use Table 3 to illustrate this process. At last, we combined similar initial codes through pattern matching to develop five themes, as seen in Table 4: (a) communicating in multiple languages a prerequisite for globally competent teaching, (b) awareness of global issues and current events: prerequisites for globally competent teaching, (c) challenges in integrating content-aligned explorations and discussions, (d) success practice of diversity of students identities a resource for global learning, and (e) successful practice of local-global inquiry.

FINDINGS

The first two themes answer the research question 1. *What prerequisites, successes, and barriers do teachers report when developing a global competent teaching practice?* The first theme is *Communicating in Multiple Languages: A Prerequisite for Globally Competent Teaching*, and the second theme is *Current Events: A Success for Some and Barrier for Others*. Following explanation of these two themes, we then explain three themes that answer research question 2: *What experiences do teachers report when enacting global learning?*

Communicating in Multiple Languages and Awareness of Current Events: Prerequisites for Globally Competent Teaching

Of the 24 participants in this study, ten chose to reflect on the ability to communicate in multiple languages in the pre-survey. Two identified their ability as a strength, while the rest expressed interest in improving this aspect of global competence. The specific languages mentioned were Spanish, French, German, Bosnian, Mandarin, and Arabic. As the participants reflected on their language abilities, they mentioned how the importance of using multiple languages is intertwined with students' backgrounds and the need for effectively communicating with students and families.

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Table 3. Codebook sample from collaborative analysis

Research Questions	Initial Codes	Operational Definition	Examples/Research Notes
Prerequisite	Value multilingualism	Value multilingualism. Indicate that they know another language and/or understand that language is foundational to culture and global teaching.	"I really would like to take some time out to learn more Arabic phrases, I know that I will not be fluent, but I need to be able to communicate with my student's parents a little easier."
Successful Practice	Equity and equality	Value education that itself is equitable, and education that promotes equity and justice worldwide	"I do continue to strongly promote equity for both my students and their families in both education and community interactions."
Successful Practice	Families as resources	Value that their students' families are cultural resources	"I establish strong relationships with the parents in which I truly believe they would participate and assist their children in global competence inquiries as well as projects to determine how the issues could be addressed."
Barrier	Challenge in math and science	Value global learning and have global competence themselves but not knowing how to teach for global competence in the discipline, ex. math, physics	"I don't know how to do it even though I want to."
Barrier	Assessing global learning	Not realizing that global competence should be assessed or not knowing how to assess global learning.	"As the year continues, I plan to work on assessing my students' global competence so that I have a better understanding of where they are and how they grow as I implement more global inquiry in my classroom. Prior to taking the survey and this course, I had never considered the importance of measuring this, but rather thought that implementing cultural awareness into my classroom was enough. However, I now realize that global readiness is far more than ensuring my students are ware of other cultures and that measuring their growth is the key to learning."

Language and Cultural Diversity: Chicken or the Egg?

One teacher reflected on the need to learn a specific language to better communicate with his/her/their student's family: "I really would like to take some time out to learn more Arabic phrases. I know that I will not be fluent, but I need to be able to communicate with my student's parents a little easier." The student's background prompted the need for global competence growth in this teacher. Another teacher reflected at the beginning of the semester on a very different case. Without multicultural student backgrounds, the need for communicating in multiple languages is not as important to everyone.

One area that I, as well as my school, needs to improve is the use of multiple languages. I teach in a very rural school district with little to no diversity. Currently, we offer Spanish, but very few students take it. They do not understand the impact it can have on their understanding of the world.

This teacher goes on to connect the lack of diversity to students' low interest in multiple languages. These two reflections show how student diversity affects how multiple languages are valued.

An Action Research Study on Globally Competent Teaching in Online Spaces*Table 4. Data analysis progression from codes to themes*

Initial Code	Operational Definition	Theme
Value multilingualism	Ts value multilingualism. Ts indicate that they know another language and/or understand that language is foundational to culture and global teaching	Communicating in Multiple Languages a Prerequisite for Globally Competent Teaching
Need intercultural communication strategies	Want to learn intercultural communication strategies, believe communication intercultural is important for communicating with families	
Barrier is communication	Not knowing enough about other languages and cultures	
Families' languages	Value that their students' families are cultural resources, value communicating with parents but aware that language barriers may interfere, want to do more	
Activate students' language awareness	Aware that cultures have different language practices, but need to know strategies in how to implement, apply, activate the knowledge to inspire students to be globally competent	
Not aware of current events	Barrier to including global connections and real world problems is teacher lack of awareness about international current events	Awareness of Global Issues and Current Events: Prerequisites for Globally Competent Teaching
Using current events	Ss read about current international events that relate to the curriculum they are studying	
Values real world problem-solving	T appreciates that global learning involves real world problem-solving of global issues	
Personally globally competent but not teaching it	Knowledge of interconnectedness of world and global issues. Difference between being globally competent personally and teaching global competence	
Assess global learning	Not realizing that global competence should be assessed or not knowing how to assess global learning.	Challenges in Integrating Content-aligned Explorations and Discussions
Not in curriculum	Global learning is currently not in the curriculum, and curriculum jam packed then not enough time and need creativity to implement global learning district lack of resources and district approval	
Too many priorities	Still seeing global learning as add-on, juggling too many things, time is already tight because so much is already required, trying to integrate so many things at same time, standards not having global learning in them	
Challenge in math and science	Value global learning and have global competence themselves but not knowing how to teach for global competence in the discipline, ex. math, physics	
No international partners	Teachers do not have international partners or know ways to establish international partnerships	
Student as resource	Ss diverse identities and experiences are seen as a resource for teachers to utilize to teach all students about different cultures and countries	Success Practice of Diversity of Students Identities a Resource for Global Learning
Incorporate global/multiple perspectives	include other voices, either through researching diverse perspectives, listening to guest speakers from the community, or each other	
Diversity of identities	T is aware of and appreciates the cultural and global diversity present through the transnational identities of their students	
Equity and equality	T values education that itself is equitable, and education that promotes equity and justice worldwide	
Value students collaborating with diverse others	T wants students to collaborate and think it's important that they learn to collaborate in culturally diverse teams	
Empathy	Believe that global learning should be from and about empathy and that global learning can help students develop empathy across cultural differences	Successful Practice of Local-Global Inquiry
Inquiry	Open-ended learning, ss conducting research, constructivism framing. Want students to come to their own conclusions about controversial or political issues, based on understanding of the facts. Understand other's perspective and piece it together with one's own viewpoints	
Students challenge their own perspectives	Wants students to challenge their own perspectives. Values that global learning helps students' breakdown stereotypes about people from other countries	
Zooming out first	Looking globally first, then coming in to personal	
Local-global connection	Connecting study of global issues to the local context and issues too	
PBL	Ss engage in Project-based learning and the engineering design process, collaborative learning on projects	
Action	Ss take critically framed and informed action for social justice through service learning or projects either locally or globally	

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Supporting Linguistically Diverse Families, Enforcing Equity

Valuing efficient communication with families of different backgrounds was also seen in the reflections as a strength. A teacher reflected on their strength: “I am fluent in two languages, English and Bosnian. Working at a diverse school has helped me use both languages to help the students and their parents feel more successful at school.” This reflection shows the impact of being able to communicate effectively with families in diverse schools.

Another teacher reflected on the need to improve their ability to communicate more with parents in multiple languages. “While I am fairly capable in terms of Spanish, I am incapable in other languages which makes me think I am not providing the families with enough insight on their child’s academic performance or needs.” Even though language acquisition was not part of the graduate course, this teacher focused on refreshing their Spanish proficiency throughout the semester. They reflect on their progress in the post-survey reflection about parents communicating more often and more openly than before. The teacher intended to learn more languages to “become somewhat capable in Chinese and Arabic as it would be helpful for some of the parents. Overall, I do continue to strongly promote equity for both my students and their families in both education and community interactions.” Through this educator’s lens of equity, one can prioritize effective global teaching by improving communication with families.

Students as Resources to Increase Cultural and Linguistic Awareness

The other in-service teacher who reflected on the ability to communicate in multiple languages in response to both surveys (at the beginning and end of the semester) reflected on their language acquisition progress, “The only portion I haven’t changed very much in was with language. I, unfortunately, am limited in my learning, as two elementary students are trying to teach me Spanish.” Regardless of the amount of progress, the method they chose is positioned students as resources and experts of their language. Another teacher intended to increase cultural awareness of their class through a new student. “This year, I have an exchange student from Japan. I am hopeful that Mai cannot only teach me about her culture, but also her peers.” These two reflections show the potential of utilizing the rich linguistic and cultural backgrounds of students to increase global competencies of the teacher and other students.

Beyond Language: Intercultural Communication and Facilitation

Of the survey items, some in-service teachers identified intercultural communication as a foundational prerequisite related to globally competent teaching. Many of them chose communicating in multiple languages and intercultural communication together (as a weakness or strength). One teacher, fluent in English and Bosnian, reflected on their understanding of intercultural communication, “I can relate as I know that learning a new language has social, emotional and cognitive aspects.” Through this reflection, they identify how they have first-hand experience that learning a language is intertwined with other domains.

Another teacher reflected on the need to improve their intercultural communication to be a better educator, “I am aware that different cultures communicate differently, but I would like to work on some strategies so that I can be more effective in my communications with those students.” This goes beyond linguistic barriers and refers to the cultural factors that can make communicating (and teaching) more effective. They continued by explaining the need to form a cultural bridge between teacher and students;

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“Very few students are like me, and I love it, but if I could bridge that gap a little more and be a little more culturally responsive, that would be excellent.” These reflections show how the teachers value their students’ diversity and the importance of communicating effectively with them.

Awareness of Global Issues and Current Events: Prerequisites for Globally Competent Teaching

Awareness of global issues and current events was a success for some and barrier for others, but all participants demonstrated that being globally aware was a value. When talking about strengths and areas to improve on the end of course survey, a total of thirteen participants mentioned understanding of current events. Among them, seven participants thought that the understanding of the current event is what they are good at. The other five participants believed that understanding of current events is what they need to strengthen.

Seven participants who thought they were good at understanding of current events gave examples to prove their points. For example, on the reflection of the survey results one said, “One of my strengths is my understanding of current events, both at a local and global level. I enjoy learning new things and I think that this translates into an openness toward other people as well.” A different participant stated, “One of my strengths is that I am aware of global issues and how they affect culture.”

On the other hand, five participants who thought they needed to strengthen their understanding of current events gave their reasons in the reflection. In one teacher’s opinion, “Understanding global conditions and current events is something that I am interested in, but just like learning a new language, I do not give as much time as I need to truly access multiple resources that portray current events.” Among the participants who stated global awareness as a weakness, one made an insightful comment, “The interesting part is that I already am proficient in actively seeking out multiple sources of news for global events and try to understand the impact, but I don’t push my students to do this also.” This teacher thought about this problem not only from the perspective of himself/herself but also teaching global competence to the students.

Challenges in Integrating Content-Aligned Explorations and Discussions

The next theme answers the research question: *What do teachers feel they need in order to enact globally competent teaching?* Participants described desires to integrate content-aligned global explorations and discussions but found doing so challenging, particularly in math and science and certain school cultures where the focus was solely on content standards.

The first challenge was a set daily curriculum. On a discussion board, a teacher stated, “There is not much time for me to be creative and incorporate global issues.” Another teacher agreed, “I teach math, and often struggle to find opportunities to open conversation to my students about relevant issues while remaining on my content timeline.” Focusing on and prioritizing content is a challenge in implementing global learning even to teachers who understand the importance of cross-cultural or international interaction. One teacher stated: “Involving my students in global issues and making it a part of the curriculum would engage them, but from a mathematical perspective that alignments with the standards is what I’m finding challenging.” On the end of the semester survey, this educator felt they were still in the processing stage. Going from understanding the need to integrate global learning to learning how to

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apply these concepts practically is more challenging in subjects where there are not standards explicitly making connections.

The second reason was how the subject was not inherently integrated with global learning. A teacher stated on the post-survey reflection, “Math is more of a reach to have a discussion about such things, when usually we are just working with numbers and talking about numbers.” Similarly, another math teacher stated, “These are harder for me to incorporate in my classroom than they would be in a social studies or language arts classroom. I do not have intercultural conversations in my classroom.”

Not knowing how to incorporate global learning was also mentioned by a math teacher who showed passion and a sincere desire to incorporate diversity, “As a math teacher I do not know where to do this as we do not really have discussions about these issues naturally through the curriculum.” A different teacher reflected, “I would like to see or know more about how to integrate these [global] opportunities into an upper-level math classroom where it is not always as inherent in how to do so.”

In chemistry, a teacher optimistically reflected on the possibility of adding a global lens. “I would like to be able to bring more of these worldviews to my students. It is something that I discuss in passing with students, but it is not an integrated part of my curriculum.” This educator realized they need to actively seek out ways to incorporate global learning into the curriculum. A distinction between subjects within science was made by another teacher; “It’s relatively easy to get my environmental science students to have a conversation about global perspectives, but it’s not as easy for physics.” Like math educators, they continue, “I always tend to focus on the content only and am not sure how to use that content in a global context.” Discussions that are content-relevant and provide global perspectives were challenging for the participants in this study. As such, Table 5 provides examples of global topics for math and science.

Table 5. Global topics for math and science

Discipline	Global Topic
Mathematics	Global digital divide; currency conversion; Fahrenheit to Celsius conversion
Biology	HIV/AIDS; global pandemics; cloning; clean water
Environmental Science	Green schools project; deforestation in Tennessee, Brazil, and Kenya
Physics	Clean energy; clean water

Two Successful Practices for Globally Competent Teaching Across Disciplines

The last two themes answer the research question: *What methods do teachers perceive would be beneficial when teaching students for global competence?*

Diversity of Students’ Identities Resource for Global Learning

At the beginning of the semester, several teachers reflected on their strengths in creating a classroom environment that values diversity and global engagement and their commitment to promoting equity worldwide. They both had students that come from all over the world. One shared how they frequently had discussions with their diverse students “about respecting each other’s languages, cultures, and thoughts. Everyone’s ideas are valued equally in my classroom and I remind students that every one of us has the

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power to promote a more equitable world.” The other teacher described their class context of diverse English abilities working together to promote equity: “It is my passion to ensure that every student believes and know that he or she can and will learn unashamedly in my classroom.” Another participant stated: “I choose to focus on the students’ cultural background and allow them to share important pieces of it with their peers.” A fourth participant shared a similar value of students sharing their cultures with one another: “Appreciate the connection made to the diverse cultures in your room, even amongst students who may share a lot of identities. It’s crucial we remember this and help students explore this.”

One elementary teacher was in the process of implementing a global project called Holidays Around the World. They chose Laos and two other first grade teachers chose different countries to learn about with their first-grade students. “We can all collaborate and learn about three different countries. We will learn about the different traditions/customs, politics, holidays, foods, etc. This will help students learn about different cultures.” One teacher shared that their students learned so much from a similar project, “This really helps everyone connect and find a common bond.” They replied to the post with three suggestions: creating a Cultural Potluck, share presentations with other grades, and have family members read a story from their home country. Another teacher stated, “Overall, I do continue to strongly promote equity for both my students and their families in both education and community interactions.” Connecting with students’ and families’ cultures provides rich resources for classrooms with diversity. As one participant articulated on the post-survey reflection, “I establish strong relationships with the parents in which I truly believe they would participate and assist their children in global competence inquiries as well as projects to determine how the issues could be addressed.” Addressing global issues through inquiry leads to the next theme.

Local-Global Inquiry

At the end of the semester, two teachers reflected on global learning inquiries they had started and how they utilized technology to support students’ learning. “I had an Apple design rep video chat with my students to discuss how she uses various skills she learned in order to fulfill various design ideas and advertise products on a global scale.” The teacher reports that many of the students were engaged in the lesson and it “helped them think about how communication on a global scale could help them become more marketable now that the world is so interconnected due to social media.” A science teacher planned a unit that also focused on the interconnectedness of students’ personal lives with global systems.

She designed for students to utilize technology to collaborate with a class in another country to solve an environmental sustainability issue at their schools. On the Project-Based Inquiry Global unit plan, a science teacher stated that in addition to learning the course content, she valued that an inquiry project on sustainable schools would enable students to collaborate with diverse others, perhaps even internationally,

Teaching students to collaborate with one another in the classroom, especially in diverse groups, provides an opportunity for them to practice these skills as well as be exposed to differing points of view. ... Through this project, my goal is for my students to understand that while environmental sustainability is a challenge that directly affects them, it also occurs on a global scale and the most effective approach to creating a more sustainable world that directly affects the society at large is through global collaboration.

An English as a second or other language teacher enacted a unit on immigration utilizing technology to allow students to collect facts on the issue. “The goal for this unit is to not only teach the students’

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basic information about immigration but to provide them with the information required to really think about and understand this issue and develop an educated, research backed opinion.” This teacher decided to zoom out to a global scale first before zooming in on immigration in the U.S. so that students could focus on fact gathering and analysis rather than on their preconceived notions. When describing the Project-Based Inquiry Global assignment, he stated:

Many teachers (myself included) have had problems bringing up immigration in the classroom because we tend to focus on immigration in the United States. If we shift our focus to immigration worldwide, we can avoid the political debate and help our students learn about the various aspects of immigration. In the past, we have attempted to bring up different issues regarding Hispanic immigration in our classes but things quickly turned into a political debate. Rather than going down this road, we decided to begin our immigration unit from a more international approach rather than just focusing on Latin America.

Throughout the unit, the teacher utilized technological resources to support students’ meeting of the unit objectives. The teacher included an interactive map of immigration stories, satellite map of the U.S./Mexico border, and the simulation project titled “Roadmap to Immigration.” On the post reflection, a teacher states: “I want them to see how things that happen on a local level can make an impact on a global level. Example: How the war in Syria impacted the world, How immigrating to a new country doesn’t just make an impact on their own life but impacts the world as a whole.” Teachers felt that the open-ended nature of inquiry provided space for students to discover the local connections and root causes of global issues in a way that would lead to positive changes in attitude towards those issues. And moving forward, teachers hoped that students would take action on global issues, as represented by this participant who stated that they wanted to teach “students what it means to be a global citizen of an inequitable world. These types of curricular opportunities will create globally ready members of society that are prepared to act against these multifaceted issues.” Taking action leads to the next section that describes solutions to the problem of practice investigated in this study and recommendations as to next steps in the context of teacher education.

SOLUTIONS AND RECOMMENDATIONS

Research on integrating global learning and teacher education curricula is a growing area. In addition, online teaching and integrating technology in teacher education holds potential for transcending geographic and metaphorical borders. Transcending borders necessitates moving beyond the local when considering the real-world context of the curriculum and our students’ identities. Each of these ideas will be discussed in detail below.

Explicitly Naming the Global in Education Contexts

The TPACK model (Mishra & Koehler, 2006) is explicit in naming context as an essential consideration in education. MacKinnon (2017) highlights the importance of context in the TPACK model and believes context (CTX) drives the other knowledges (technological, content, and pedagogical). He bases his claim on three global cases in non-traditional settings and explains how the context determines any technological, content, or pedagogical decision making on behalf of the teacher. “Using a plant metaphor, one

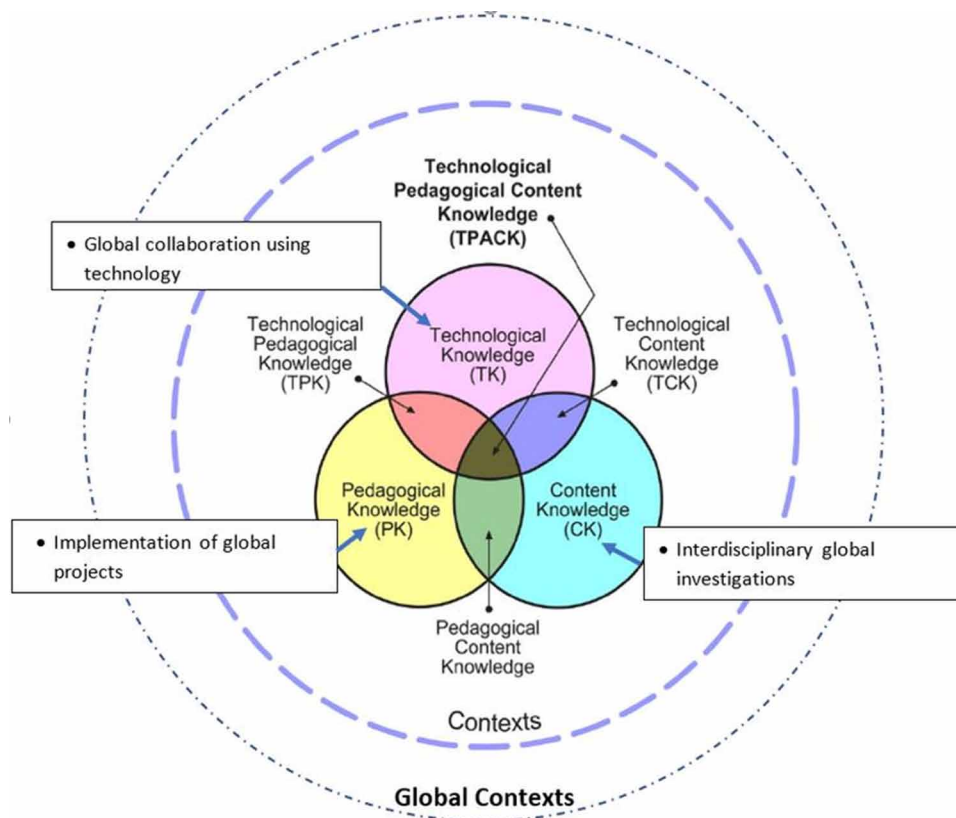
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could posit the notion that T, P and CK actually grow out of and are simultaneously constrained by the possibilities that the context affords” (p. 12). However, the global is not explicitly named. To remedy this, we renamed the TPACK circle of contexts as local contexts and add a larger circle named global contexts, as seen in Figure 5. Our TPACK model that considers local and global contexts is aligned with this view. Unlike Urban et al. (2018) who suggest replacing technological knowledge with global knowledge, this [our] model recognizes the need for integrating technology to meet learning goals, while infusing global citizenship education within each of the knowledge domains.

The new outer circle serves as a reminder for educators to consider the global implications and contexts as they design collaborative experiences and refine learning for their specific contexts. This global circle also signals the mindful integration of the global context within all knowledges (pedagogical, content, and technological). Examples of the global aspect of each knowledge domain are shown in Figure 5.

This echoes the report published by the Longview Foundation (2008), stating a globally competent teacher should have a “commitment to assisting students to become responsible citizens both of the world and of their own communities” (p. 7). Teachers need knowledge of global contexts as a prerequisite to make global connections to the curriculum. To build teachers’ knowledge of the global, they can utilize students, families, and local communities as resources. Diversity of student identities means that within the local, there is already a global context.

Figure 5. The global and digital integration model of intersecting knowledge domains for effectively teaching in the 21st century based on Mishra and Koehler (2006)



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Students, Families, and Communities as Global Resources in the Local Context

Our data showed that teachers from culturally diverse schools recognized their students and families as resources for global literacy learning, but were curious about how to invite students and their families to share their knowledge in ways that promoted the curriculum. Ghiso and colleagues (2016) assert teachers can partner with parents and community organizations to enrich the curriculum with “the robust multilingual counterpublics of their students’ home and neighbourhood communities into the curriculum” (p. 24). However, some teachers perceived the communities that they worked in as monocultural or as too transient to establish meaningful partnerships. A teacher stated that a challenge to building partnerships in the community is “because of the difficulty of developing partnerships in the classroom that my school faces due to administration transitions, lack of community support, and a community divided between two separate schools.” Another challenge to building partnerships during the Covid-19 pandemic is that communication with families and communities has become digital, which means the digital divide can impact teachers’ ability to communicate successfully.

LIMITATIONS AND FUTURE RESEARCH

Fundamental to action research, the first author was both the course instructor and researcher. It is possible that students’ intrinsic interest in global education may have elicited their interest in participation or that students may have produced what they believed would earn them a high grade, meaning that findings could include a possible positive-leaning skew. However, to mitigate concerns, all protocols were IRB-approved and informed consent received for all participants. The identity of those students who consented to the research was not revealed to the instructor until after final grades were posted. In addition, the data only included self-report of practices and beliefs. Future research could include observations of classroom practice to examine the successful practices as they are implemented in K-12 online and physical settings to determine whether what teachers’ beliefs around global learning align to the practices that they implement in their classrooms and to determine whether the practices that teachers report are the same practices that researchers observe. In addition, future research could describe how teachers can encourage all students in a class to share knowledge as a means of fostering values of diversity and equality.

CONCLUSION

The purpose of this action research study was to examine the influence of integrating global competence with an online education methods course. The findings demonstrate the prerequisites, barriers and successes of K-12 teachers when developing and enacting globally competent teaching. Conducting action research during this course helped to identify barriers participants perceived. Now that this is known, future iterations of the course can focus on providing more math and science resources and more support around multilingual and intercultural communication. Our study contributes the successful practices of embracing students’ diverse cultures as resources and inquiry on local-global issues as providing space for globally competence learning. Future research in online teacher education can explore multilingualism as

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a prerequisite and/or barrier for globally competent teaching and for relationship building with globally diverse families. Future research can also explore topics to integrate global competence in mathematics and science classrooms that align to state standards in those courses. As our world continues to become increasingly digitized and globalized, teachers will also need to be globally competent themselves and to be able to support students in becoming globally competent too.

ACKNOWLEDGMENT

This research was supported by the Longview Foundation.

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KEY TERMS AND DEFINITIONS

Action Research: A disciplined investigation process conducted by and for those taking the action. Assisting the “actors” in improving and refining their actions is the main reason for conducting an action research.

Digital Literacy: The capacity to locate, read, create, and communicate texts in online and digital environments.

Global Competence: The knowledge, skills, and attitudinal and ethical dispositions needed to understand, interact, and problem-solve globally.

Global Learning: Through strategic institutional partnerships and innovative academic, experiential, and co-curricular programming expressed in diverse and challenging global contexts, students learn to think critically, observe skillfully, reflect thoughtfully, and participate meaningfully.

Global Readiness: Possessing the digital and global literacies necessary for career, community, and civic life in our digitized, globalized world.

Globally Competent Learning Continuum: A rubric of 12 dimensions of global competence as related to teaching and learning.

Globally Competent Teaching: Being globally competent oneself and fostering students’ development of global competence.

Teaching for Global Readiness Scale: A 21 item self-reflection survey on teaching practices that can promote students’ global readiness.

TPACK: The technological, pedagogical, and content knowledge needed to be an effective teacher.